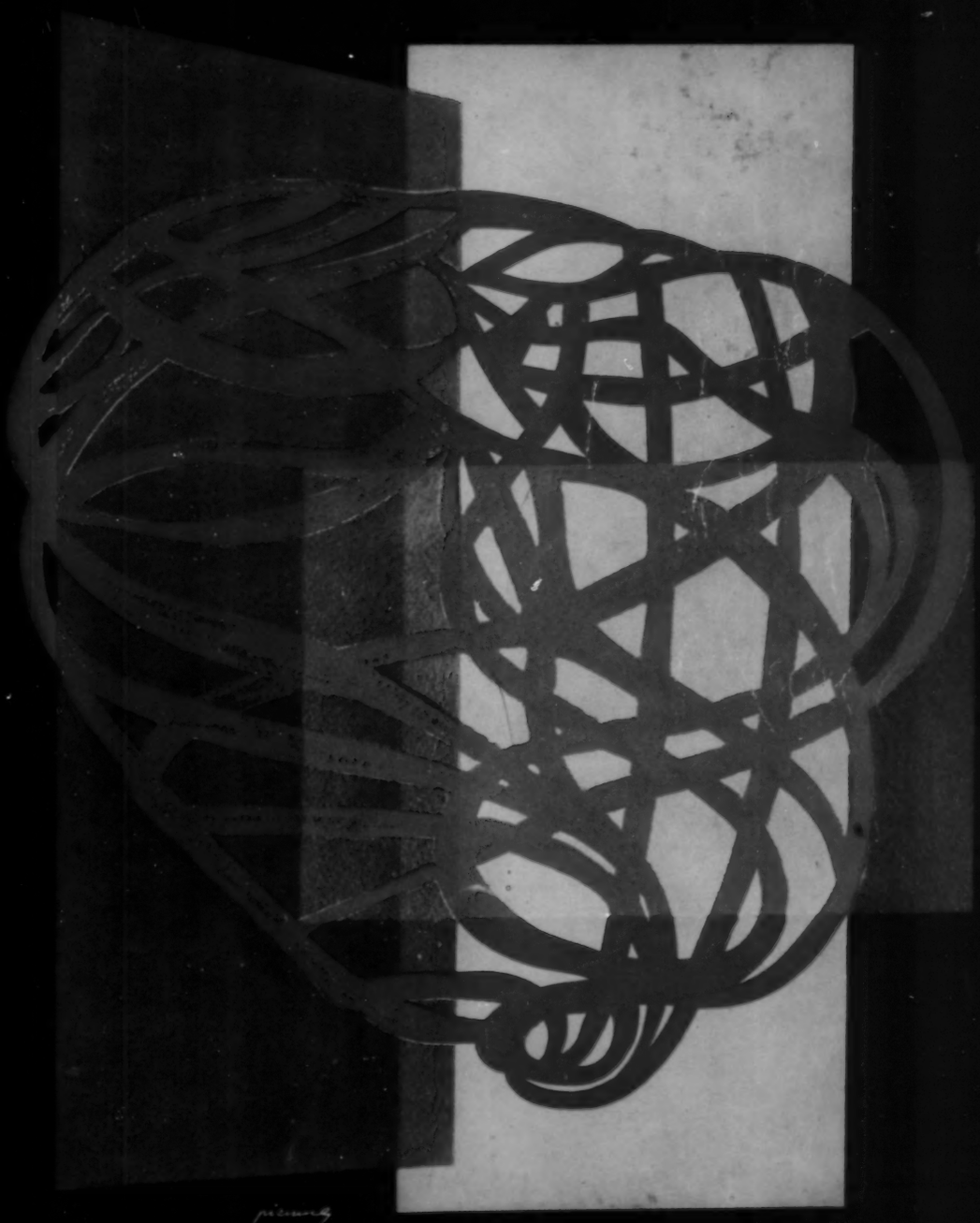
ARCHITECTURAL

RECORD



HOSPITALS

JUNE 1947

How to specify Industrial Flooring that will please everybody!

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INDUSTRIAL PRODUCTS DIVISION

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Architects and engineers like these flooring specifications because they mean a satisfactory, long-lasting, durable floor that satisfies their clients.

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ARCHITECTURAL RECORD

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WATROUS *SILENT-ACTION* Eliminates Flush Valve Noise Without the Use of Screens . . .

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This corrugated dispersion silencing element eliminates all objectionable flush valve noise . . . NOTE THAT NO SCREENS WHATSOEVER ARE USED.

THE growing preference for silent-action in flush valves has resulted in the development of many methods of silencing. The difficulty with earlier methods, using some form of screen, shot, muffler, or similar elements which invariably become clogged, was that the flush valves either did not remain quiet—or the silencing elements had to be cleaned or replaced all too frequently.

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THE WATROUS WAY

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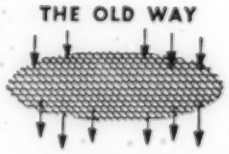
THE OLD WAY



The old method of silencing flush valves is to pass part or all of the water going to the valve through one or more screens. (Perforated discs or shot pellets also used). The trouble with this method—as the screen on your kitchen faucet will quickly show you—is that screens become clogged and must be cleaned or replaced at frequent intervals.

Also, clogging makes necessary frequent adjustment of the shut-off to keep the valve working properly.

For complete information on Watrous Flush Valves see Sweet's Catalog or write for Catalog No. 448-A. Also ask for Bulletin No. 477 giving a summary of "Architects' Views on Flush Valve Applications."

THEY PAY FOR THEMSELVES IN THE WATER THEY SAVE

Watrous Flush Valves

THE RECORD REPORTS

Construction Beginning to Feel Consumer Resistance How Permanent Are Current Values? • Rent Control Is Still a Moot Question • Materials Picture Brighter

By mid-spring the downturn in housing construction seemed definite, and not a mere unsure frown tapering a statistical curve. The figures were in: they showed that builders were starting fewer new projects. Spokesmen for both industry and government were passing the blame around, but nobody had yet put together a straight story.

The clear case, which nobody contested, was that costs and prices were too high. It was becoming more apparent that the banks, sometimes on their own and sometimes at the instigation of examiners, were less interested in mortgages without guarantees: FHA business was picking up. Rumors abounded of builders who had gambled too heavily and who, by virtue of price rises, escalator clauses that had turned against them, etc., had been called in by their bankers.

What was not agreed on was how it had all happened. During the debates on rent control, the Taft bill and other housing legislation, pro-Administration Congressmen blamed the, to them, premature relaxation of price and other curbs; majority Congressmen, like industry spokesmen, blamed the failure to relax controls promptly.

Neither Administration nor industry spokesmen were agreed either on their stories. Norman P. Mason, president of the National Retail Lumber Dealers Association, in addressing the annual Chamber of Commerce meeting, castigated the publicity given to high prices for new homes: it had, he thought, stopped sales. His indignation was illustrative. But a letter by the National Association of Home Builders itemized 1941 and 1947 costs within an Eastern Seaboard open-shop city, showing that the $6,041 house of 1941 in six years had been transformed into a $10,779 job.

Are Values Permanent?

The question for the industry was whether to try to persuade the public, the banks and others that the new scale was permanent or to scrape along while awaiting an adjustment. Since in many respects it is now part of the industry, this was the question for government too. Representatives of the industry seemed to have decided on or slipped into the first course. The literature coming out of Washington increasingly accented the note that heads of households who waited might find nothing until their children were full grown.

Whether the present cost and price scale is permanent depends, of course, on factors outside the industry, notably on how business moves. The Administration line, as expressed by the Economic Council and by the President, was that prices were too high and would have to come down. Otherwise goods would be over-produced and unsold. Otherwise, in their view, depression was coming.

But the government's figures, in distinction from its prose comment, showed that the boom so far has been one of investment as well as retail sales. Private investment had risen from 1945 to 1946 from $9 billion to $32 billion while consumer expenditure had gone up from $106 to $127 billion. There was the possibility that some of the high investment had been attracted by the high prices, high margins and high profits and would drop if these dropped. In the construction field, however, there is a known backlog of municipal, commercial and other building awaiting lower costs.

1947 Estimate Lower

The government estimate of 1947 new construction volume was reduced from around $15 billion, as calculated in December, to around $12 or $13 billion. But the lower figure, when adjusted to 1939 construction values, was transformed into a still lower one of less than $7 billion. The difference between $12.5 billion and $7 billion, government statisticians recognized, could become something more than academic statistics should the banks increasingly look the other way when exposed to current valuations.

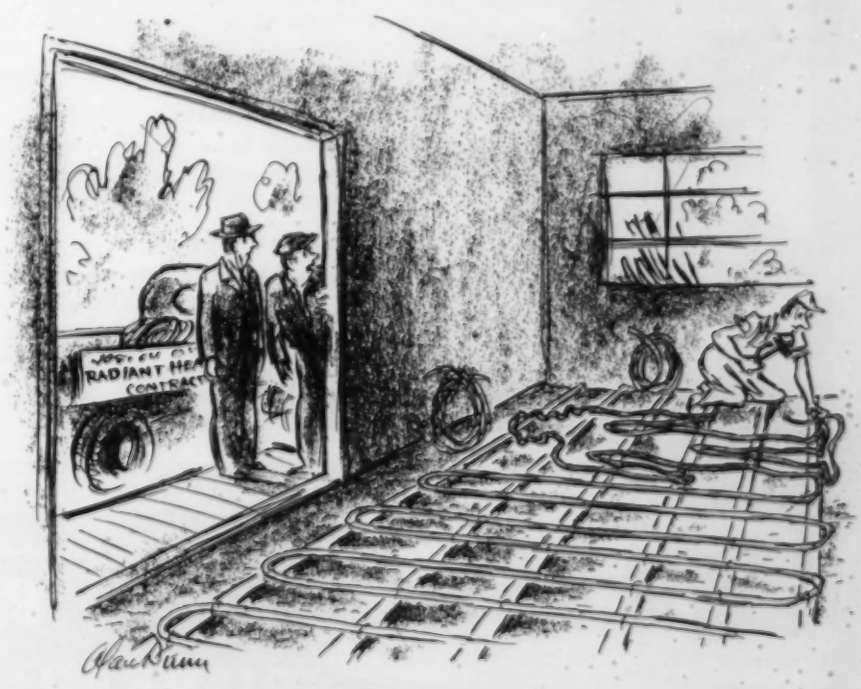
Originally the statisticians had put forward $6 billion for private residential urban building compared with $3.3 billion in 1946. But the retouching which came with second sight shaved the new forecast to a range between $4.25 and $4.8 billion. Instead of starting 1,000,000 homes, builders would be satisfied with 700,000 to 800,000; instead of completing 900,000, they would finish 720,000 to 770,000. The completions, of course, included a carry-forward from 1946 estimated at around half a million so that another big carry-forward into 1948 was indicated.

Builders Pessimistic

What forced the recalculation was, obviously, the actual decline in number of projects started. In comment about it, Commerce Department's "Industry Report" said:

"In addition to the relatively discouraging behavior of federal permits, the general atmosphere of the residential construction industry is disturbing. Builders appear to be increasingly reluctant to start new projects because of expectations that both construction costs and the prices of finished houses

(*Continued on page 10*)



"I was afraid of that — the irrational in him is coming out!"

— Drawn for the RECORD by Alan Dunn

AN ARCHITECT ASKS:

"When should I specify The Elevator That's Pushed Up?"

These are the four situations that call for an Oildraulic Elevator

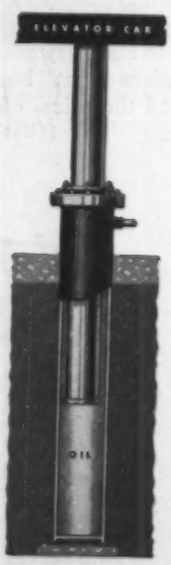
1. When modern design says "no penthouse wanted."

2. When very accurate landing stops are essential.

3. When construction costs must be held down.

4. When the building is not over 4 stories high.

REASONS FOR THE ABOVE RECOMMENDATIONS



No unsightly penthouse

Because it's pushed from below by a powerful hydraulic jack, not pulled from above, the Oildraulic Elevator requires no costly, unsightly penthouse.

Accurate landing stops

Guided by the highly efficient "Oildraulic Controller," this modern elevator operates smoothly and stops at floor landings with accuracy. Very important where loading and unloading is by power vehicles.

Lower construction costs

No need for heavy, load-bearing supporting columns to carry the elevator and its load . . . they are supported by the hydraulic jack. No special machine room either.

For rises up to 40 feet

Oildraulic Elevators are recommended for rises through 40 feet and capacities through 60,000 lbs. For more than 4 stories, a cable type elevator is usually less expensive.

Left: Diagram of powerful Oildraulic Jack which lifts elevator car.

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- Reflector spot lamps in the area behind the speaker emphasize and focus attention on charts or products used to illustrate the talk.
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are due for a drop. Reports are also accumulating concerning the difficulty of selling newly completed houses and it is clear that the housing market is less active at the present time than it was some months ago. It must be pointed out, however, that the claimed hesitancy on the part of the builders seems inconsistent with the actual number of starts during the first quarter. Whether this inconsistency arises because these units represent largely units for which commitments were made last year or whether the actions of the builders differ from their public statements is not clear."

Commercial and industrial building, on the other hand, is expected to remain high. The $50 million per week limitation on volume of permitted construction has not been so high that every application could be admitted; on the contrary in March the Housing Expediter was refusing to allow $1 of construction for every $2 that he sanctioned. Unless the trend changes, therefore, the expected decline in residential work may be offset in part by augmented business construction when controls are removed.

Taxes Play a Part

Finally there is municipal construction. The news still coming to the capital is that town councils debate whether to accept present costs in order to take advantage of favorable bond market conditions or to forego the sale of bonds at good prices in the hope of reduced building costs. For municipal bond prices probably will go lower as taxes are cut: their market depends in part on tax exemption which, naturally, becomes the more important the higher the tax rate.

The House of Representatives decided, as expected, to take from the executive agencies its powers over building materials which through disuse had more or less lapsed anyway. The fact that the powers were not being used was, of course, a powerful argument for the House committee which handled the legislation: Congress no longer believes in granting powers whose necessity is not supported by the evidence of exercise. But the Expediter had stopped allocating everything except pig iron for cast iron soil pipe and did not expect to allocate this after June 30. The legislative and administrative dates are identical.

The House also eliminated the restraint on non-residential construction — with a single exception: amusement and recreational building still will require federal sanction. This continued curb, perhaps, paid deference to the publicity which the daily press used to give to the occasional race-tracks put up in late 1945 and early 1946. Their effect on total volume would be negligible.

The House measure continued some government help for the new prefabricated industry. FHA will guarantee one-year 4 per cent loans to companies to supply working capital. This, of course, is a far cry from the guarantee of markets which the industry enjoys now. It is not altogether clear that companies which have adequate capital and are confident of markets are in need of quick cash. However, since banks are becoming more cautious the guarantee of working capital loans is likely enough to gain in usefulness.

Will Rent Curbs Stay?

The House's handling of rent control, even when documented by the original committee testimony and the floor debate, is a less than infallible guide to the future course of rental payments. The continuation of ceilings through the year and through the first 1948 quarter if the President so directs is subject to qualifications; it's a different kind of control:

1. Enforcement lies in the courts, not in the action of a federal agency;

2. The landlord may negotiate a long term lease — to remain in force at least through 1948 — at rentals 15 per cent above the existing ceiling. The negotiations must be bona fide; the landlord is not supposed to say "Sign or get out."

These modifications represented the committee's effort to find something that would win majority support in face of one group's utter opposition to any controls and opposition by a second group, fewer numerically at the moment but showing growth potential, to any relaxation. In effect, the committee had to tell the tenants that controls were preserved and the landlords that they stood some chance of getting more money.

The rent clauses fail to illuminate the future with absolute clarity because, as the floor debate showed, one can hold all sorts of opinions on whether tenants will know how and be ready to exercise their rights. The pro-tenant opposition, for instance, feared that (a) tenants would not go to court, and (b) courts themselves would soon get mired in arguments about operating costs, rent levels, etc., so that rents would move to a new level before definite legal doctrine had evolved.

Completely excluded from control are new construction and private houses

(*Continued on page 12*)

Proposed new studio has drive-in entrance

BUILDING NOTES

Photographer's Studio

A four-story studio building now being planned for Larry Gordon, advertising photographer, features a drive-in entrance and a lift to take cars and boats up to the posing area. Milton Sherman, A.I.A., is the architect.

Present plans call for a prop room and complete storage facilities in the basement, with reception room, offices, darkrooms, art department quarters and dressing rooms on the first floor. The studio itself is two-storied, has electrically operated dividing partitions to make as many as three sets if necessary; it is also equipped with a gallery off which is located the research department. For outdoor shots the studio roof is planned for fairly extensive planting.

Giant Hangar

A reinforced concrete, fireproof hangar, thought to have the largest span of any hangar of this type built to date — 340 ft. wide — is being designed for immediate construction at the very heavy bomber base at Rapid City, S. D. under the supervision of the Corps of Engineers.

The hangar, which will cost approximately a million dollars, is of archtype monolithic reinforced concrete construction with a door opening 300 ft. wide by 40 ft. high and auxiliary tail doors 50 ft. wide by 20 ft. high at the center of the opening, thus providing a center opening 50 ft. wide by 60 ft. high, permitting the passage of tail assembly without increasing door height for the full width.

Army Housing

A new type of temporary Army family housing, convertible into permanent structures with a minimum of alteration and additional expenditure, has been designed by the Corps of Engineers.

The new buildings, temporarily consisting of four apartments each, are so planned and constructed that they can be converted into two duplex houses, each having seven rooms.

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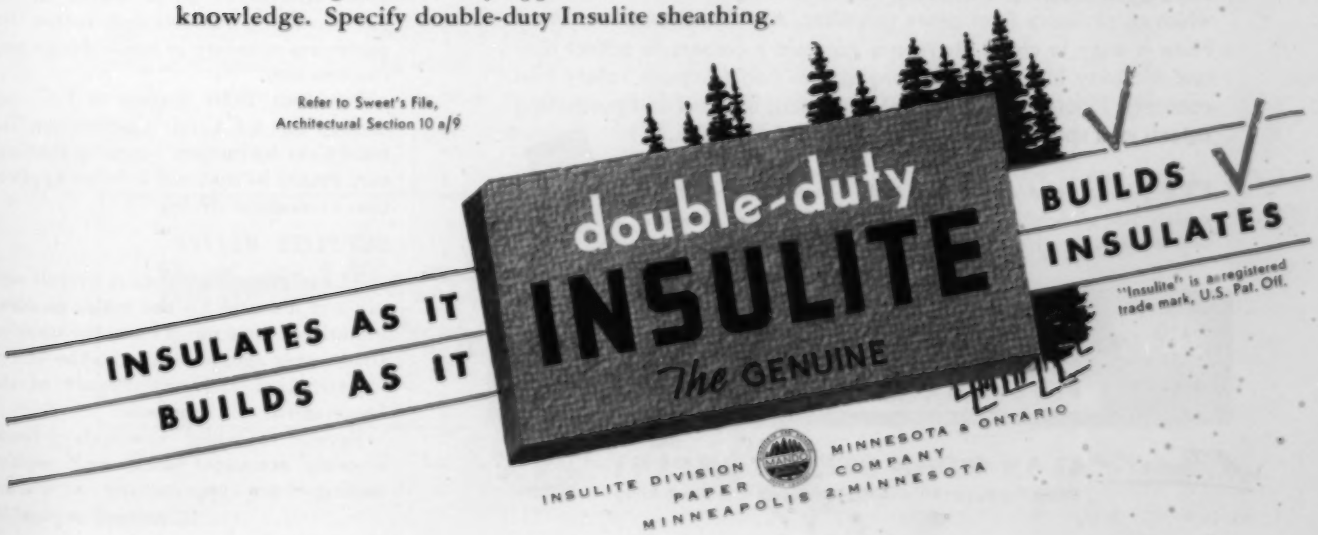
Refer to Sweet's File,
Architectural Section 10 a/9



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THE RECORD REPORTS

(*Continued from page 10*)

converted into apartments. The absence from control, it is hoped, will inspire additional apartment construction. There has been any amount of talk about the effect of present rent levels on apartment buildings. However, FHA officials don't think that the present rents should be an exclusive criterion in setting valuations; bankers surely will feel the same way as the guaranteeing agency.

Hope of government officials, in all this, lies in the work of the laboratories in developing new materials which are expected, as they come into use, to curtail costs appreciably. In this connection the Technical Office of NHA is developing a document on performance standards covering structures and insulation of permanent dwellings. They will be offered as a yardstick to appraise new materials and methods. Such a document, officials think, may help win over local governments to changing their codes from direct to functional specification. This is essential to getting the new materials into actual use.

❖ ❖ ❖

PRODUCERS' COUNCIL MEETS

Producers' Council, meeting at Grand Rapids with the A.I.A. April 28–30, staged three significant meetings and gave a testimonial luncheon to Chris Bebb, formerly of Otis Elevator Co., now with American Management Association. At a dinner which many A.I.A. members attended, P.C. heard James C. Downs, Jr., president of Real Estate Research Corp., prophesy that building costs will shrink but little in the near future.

Finding means to reduce building costs, however, was the object to which business sessions were heavily devoted. The high-spot project sponsored by P.C. to this end is the Industry-Engineered house shortly to be presented to the public as a demonstrated means for maximum economy in house design and construction.

President Tyler Rogers of P.C. addressed the A.I.A. on "Cooperation Toward Cost Reduction," arguing that one sure means to that end is fuller application of modular design.

SUPPLIES BETTER

The relationship between overall supply and demand for the major building materials is now much more encouraging than a year ago, according to the March Construction Industry Report of the Department of Commerce.

Several building materials — brick, cement, concrete block and asphalt roofing — are approaching a market

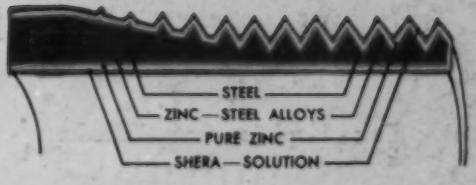
(*Continued on page 14*)

SHERARDUCT—FULL WEIGHT, THREADED, RIGID STEEL CONDUIT

THERE to STAY!

There is nothing temporary about SHERARDUCT! It's about the most permanent thing you can buy in wiring. Permanent because it is *Sherardized.* This provides maximum protection against *fire, acids, alkalies and other corrosive agents* . . . **provides lifetime mechanical protection to wires and cables.**

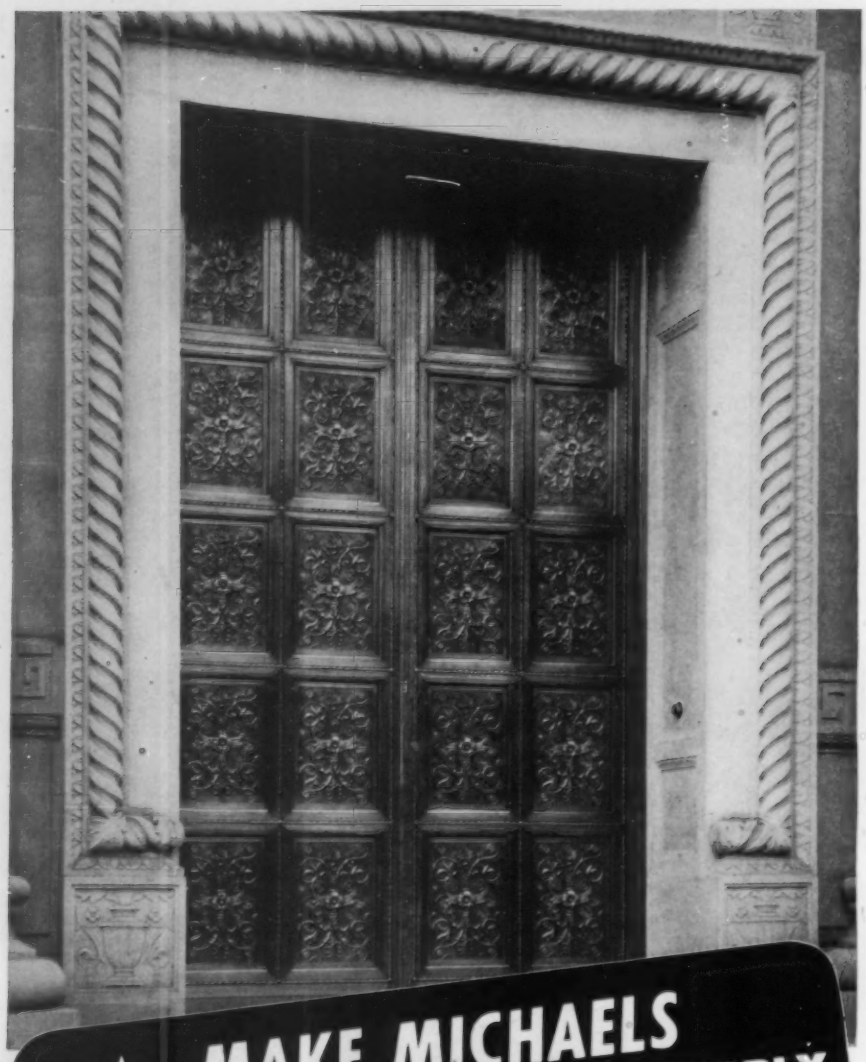
The SHERARDIZING process drives a pure zinc coating into the steel surface —alloys this coating to the steel tube. Then it is sealed with a special acid-proof, clear "Shera-Solution," baked on, for added durability. Thus, outside and inside surfaces, threads and ends of the conduit are all securely protected with both a zinc coating and the "Shera-Solution."



This combined coating will not split or peel, will not crack when the conduit is bent, offers years and years of complete protection.

Everything in wiring points to NE

National Electric Products Corporation
Pittsburgh 30, Pa.



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Building Directories
Bulletin Boards
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Manufacturers since 1870 of many products in Bronze, Aluminum and other metals

THE RECORD REPORTS

(*Continued from page 12*)

balance, the report states. Supply difficulties are being encountered, however, in certain areas because of low inventories. While high production levels were achieved early this year for such items as millwork, flooring, gypsum board, cast iron soil pipe and plumbing fixtures, output is probably not adequate to meet current requirements and must be still higher to rebuild inventories.

ON THE CALENDAR

May 22–Sept. 15: "Tomorrow's Buildings" exhibit of current work of members, Architectural League of New York, 115 E. 40th St., New York City.

June 9–13: Hospital Public Relations Institute, American Hospital Assn., Westminster Choir College, Princeton, N. J.

June 11–27: 7th Antique Dealers' Fair and Exhibition, Great Hall, Grosvenor House, Park Lane, London W. 1, England.

June 12–22: 2nd annual Construction Industries Exposition and Home Show, Pan-Pacific Auditorium, Los Angeles.

June 15–19: Semi-annual Meeting, American Society of Mechanical Engineers, Stevens Hotel, Chicago.

June 16–20: Annual Meeting, American Society for Testing Materials, Chalfonte-Haddon Hall, Atlantic City, N. J.

July 7–12: 1st Annual Store Modernization Show, Grand Central Place, New York City.

Sept. 1–4: Fall Meeting, American Society of Mechanical Engineers, Hotel Utah, Salt Lake City, Utah.

Sept. 10–12: Porcelain Enamel Institute Forum, Ohio State University, Columbus, Ohio.

Oct. 30–Nov. 1: 15th Semi-Annual Meeting, American Society of Tool Engineers, Statler Hotel, Boston, Mass.

Nov. 3–7: 2nd International Lighting Exposition and Conference, Stevens Hotel, Chicago.

Dec. 2–5: Annual Meeting, American Society of Mechanical Engineers, Chalfonte-Haddon Hall, Atlantic City, N. J.

ROSENFIELD TAKES PRIZE

Isadore Rosenfield, architect and hospital consultant of New York, and Velez, Posada y Rodriguez, Ltda., architects of the Republic of Columbia, have been awarded first prize in the competition for the 300-bed Industrial Hospital at Medellin, Colombia.

Despite its name, derived from the fact that it is being sponsored by the National Association of Industrialists, the institution is a general hospital with special emphasis on provisions for chil-

(*Continued on page 16*)

Do Noise Demons trouble your client?

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CLIENTS often seek an architect's advice to solve the problem of noise when they remodel or build a new structure. Now you can help your clients, in a practical way, to plan for efficient, modern acoustical treatment. It actually costs only 3¢ a day, per occupant, when figured over a few years, to install Armstrong's Cushiontone.

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WRITE FOR FREE BOOKLET, "How to Exterminate Office Noise Demons." Armstrong Cork Company, Acoustical Department, 2406 Stevens Street, Lancaster, Pennsylvania.

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THE RECORD REPORTS

(*Continued from page 14*)

dren. It will be of contemporary design, with a main block 415 ft. long and five stories high. Auxiliary services are arranged in one- or two-story buildings surrounding two courts, one of which is a service court and the other a garden patio. The cost of the structure is estimated at about $3,000,000.

ERNEST FLAGG

The death of Ernest Flagg, dean of American architects, on April 10th brought to a close a long and brilliant career.

Mr. Flagg, who celebrated his 90th birthday last February, was perhaps best known as the architect of the United States Naval Academy at Annapolis. Other well-known structures of his design include the Singer Building on lower Broadway (the tallest commercial structure in the country at the time it was built, 1908), the Washington State Capitol in Olympia, the Corcoran Art Gallery and the Naval Hospital in Washington, D. C., and the Connecticut Mutual Life Building in Hartford, Conn. One of his earliest assignments was the design of St. Luke's Hospital in New York City, a contract which he won over some 80 other architects.

A native of Brooklyn and a graduate of the Ecole des Beaux-Arts in Paris, Mr. Flagg practiced continuously in New York from 1891 until his death. He was a founder and former president of the Society of Beaux Arts Architects, and the author of a number of books.

VICTOR L. HAFNER

Victor L. S. Hafner, A.I.A., died suddenly at his home on April 27th. He was 54.

Born in Cincinnati, Mr. Hafner was a graduate of the Massachusetts Institute of Architecture, recipient in 1920 of a Rotch traveling scholarship and the fellowing year winner of a three-year fellowship in architecture in the Prix de Rome competition. He served in the Navy in both World Wars, attaining the rank of Commander.

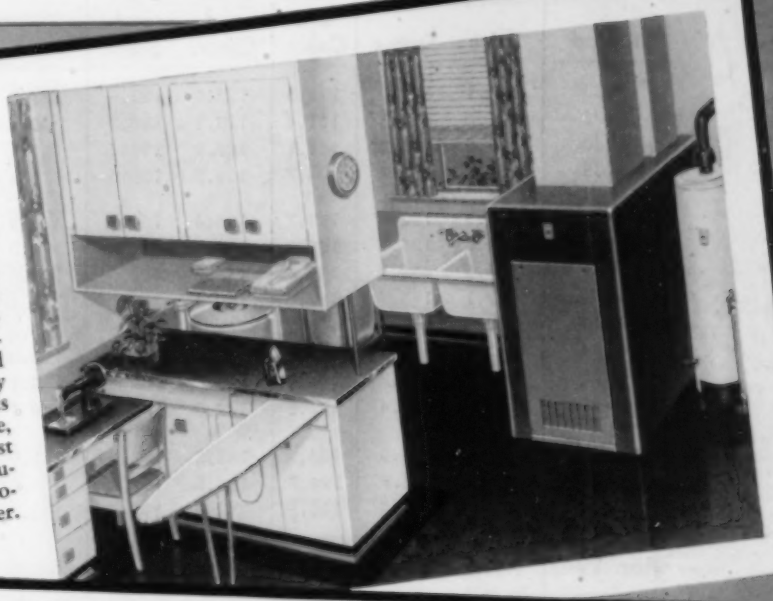
WALTER R. B. WILLCOX

Walter Ross Baumes Willcox, 77, professor emeritus in architecture at the University of Oregon and a member of the staff for more than 21 years, passed away on April 20th at his home in Eugene.

Well-known in architectural circles on the Pacific Coast, Prof. Willcox had practiced in Washington and taught in the University since 1908. He was a fellow of the American Institute of

(*Continued on page 152*)

Helpful Design Ideas from AMERICAN-Standard



UTILITY ROOM—Center of interest in this attractive first-floor Utility Room is the **SARATOGA** Winter Air Conditioner, a low priced, oil fired unit especially designed for small homes. Compact jacket encloses both blower-filter unit and heating element. Also provides space for concealed Arcoflame or any other standard oil burner. The laundry tray shown under the window is the **ALDEN**, made of durable, easily cleaned enameled cast iron. Also shown is the popular **BUDGET** Gas Fired Automatic Storage Water Heater.

MODERN KITCHEN—What a picture the trim, efficient **ROYAL HOSTESS** Sink makes under this window. Designed for maximum cleanliness and convenience, this 6-foot double compartment, double drainboard sink is made in one piece . . . of rigid cast iron with a heavy coating of acid-resisting enamel. Fittings are finished in non-tarnishing Chromard for easy cleaning and lasting beauty. Roomy cabinet provides abundant storage space beneath.

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CONSTRUCTION COST INDEXES — Labor and Materials

United States average 1926—1929=100

Compiled by Clyde Shute, manager, Statistical and Research Division, F. W. Dodge Corporation, from data collected by E. H. Boeckh & Associates, Inc.

NEW YORK

Period	Residential		Apts., Hotels, Office Bldgs.	Commercial and Factory Buildings	
	Brick	Frame	Brick and Concr.	Brick and Concr.	Brick and Steel
1920	136.1	136.9	123.3	123.6	122.6
1925	121.5	122.8	111.4	113.3	110.3
1930	127.0	126.7	124.1	128.0	123.6
1935	93.8	91.3	104.7	108.5	105.5
1939	123.5	122.4	130.7	133.4	130.1
1940	126.3	125.1	132.2	135.1	131.4
1941	134.5	135.1	135.1	137.2	134.5
1942	139.1	140.7	137.9	139.3	137.1
1943	142.5	144.5	140.2	141.7	139.0
1944	153.1	154.3	149.6	152.6	149.6
1945	160.5	161.7	156.3	158.0	155.4
1946	181.8	182.4	177.2	179.0	174.8
Jan. 1947	195.4	198.0	183.9	186.2	183.0
Feb. 1947	204.7	208.9	194.7	193.5	191.1
Mar. 1947	211.2	217.2	196.2	194.4	192.9
	% increase over 1939				
Mar. 1947	**71.0**	**77.3**	**50.1**	**45.7**	**48.2**

ATLANTA

Period	Residential		Apts., Hotels, Office Bldgs.	Commercial and Factory Buildings	
	Brick	Frame	Brick and Concr.	Brick and Concr.	Brick and Steel
1920	122.8	122.9	108.6	109.8	105.7
1925	86.4	85.0	88.6	92.5	83.4
1930	82.1	80.9	84.5	86.1	83.6
1935	72.3	67.9	84.0	87.1	85.1
1939	86.3	83.1	95.1	97.4	94.7
1940	91.0	89.0	96.9	98.5	97.5
1941	97.5	96.1	99.9	101.4	100.8
1942	102.8	102.5	104.4	104.9	105.1
1943	109.2	109.8	108.5	108.1	108.7
1944	123.2	124.5	117.3	117.2	118.2
1945	132.1	133.9	123.2	122.8	123.3
1946	148.1	149.2	136.8	136.4	135.1
Jan. 1947	161.9	164.2	145.7	147.1	145.8
Feb. 1947	165.8	166.8	148.8	149.9	148.8
Mar. 1947	178.7	182.9	153.4	152.0	153.1
	% increase over 1939				
Mar. 1947	**107.1**	**120.0**	**61.3**	**56.1**	**61.7**

ST. LOUIS

Period	Residential		Apts., Hotels, Office Bldgs.	Commercial and Factory Buildings	
	Brick	Frame	Brick and Concr.	Brick and Concr.	Brick and Steel
1920	118.1	121.1	112.1	110.7	113.1
1925	118.6	118.4	116.3	118.1	114.4
1930	108.9	108.3	112.4	115.3	111.3
1935	95.1	90.1	104.1	108.3	105.4
1939	110.2	107.0	118.7	119.8	119.0
1940	112.6	110.1	119.3	120.3	119.4
1941	118.8	118.0	121.2	121.7	122.2
1942	124.5	123.3	126.9	128.6	126.9
1943	128.2	126.4	131.2	133.3	130.3
1944	138.4	138.4	135.7	136.7	136.6
1945	152.8	152.3	146.2	148.5	145.6
1946	167.1	167.4	159.1	161.1	158.1
Jan. 1947	183.4	183.8	168.5	169.3	169.5
Feb. 1947	187.6	187.0	173.9	175.2	172.8
Mar. 1947	196.9	198.9	175.8	176.4	175.3
	% increase over 1939				
Mar. 1947	**78.7**	**85.9**	**48.1**	**47.3**	**47.3**

SAN FRANCISCO

Period	Residential		Apts., Hotels, Office Bldgs.	Commercial and Factory Buildings	
	Brick	Frame	Brick and Concr.	Brick and Concr.	Brick and Steel
1920	108.8	107.5	115.2	115.1	122.1
1925	91.0	86.5	99.5	102.1	98.0
1930	90.8	86.8	100.4	104.9	100.4
1935	89.5	84.5	96.4	103.7	99.7
1939	105.6	99.3	117.4	121.9	116.5
1940	106.4	101.2	116.3	120.1	115.5
1941	116.3	112.9	120.5	123.4	124.3
1942	123.6	120.1	127.5	129.3	130.8
1943	131.3	127.7	133.2	136.6	136.3
1944	139.4	137.1	139.4	142.0	142.4
1945	146.2	144.3	144.5	146.8	147.9
1946	159.7	157.5	157.9	159.3	160.0
Jan. 1947	173.2	170.8	167.3	169.4	172.5
Feb. 1947	177.0	173.9	172.4	174.6	176.1
Mar. 1947	185.6	184.9	174.2	175.7	178.4
	% increase over 1939				
Mar. 1947	**75.1**	**86.3**	**48.3**	**44.1**	**53.1**

The index numbers shown are for combined material and labor costs. The indexes for each separate type of construction relate to the United States average for 1926–29 for that particular type — considered 100.

Cost comparisons, as percentage differences for any particular type of construction, are possible between localities, or periods of time within the same city, by dividing the difference between the two index numbers by one of them; i.e.:

index for city A = 110
index for city B = 95

(both indexes must be for the same type of construction).

Then: costs in A are approximately 16 per cent higher than in B.

$$\frac{110-95}{95} = 0.158$$

Conversely: costs in B are approximately 14 per cent lower than in A.

$$\frac{110-95}{110} = 0.136$$

Cost comparisons cannot be made between different types of construction because the index numbers for each type relate to a different U. S. average for 1926–29.

Material prices and wage rates used in the current indexes make no allowance for payments in excess of published legal prices, thus, indexes reflect minimum costs and not necessarily actual costs.

These index numbers will appear whenever changes are significant.

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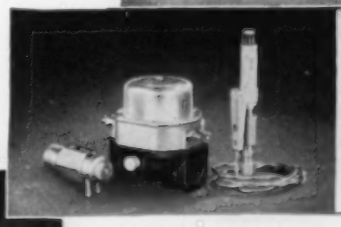
BX-230 includes B-60-68 diaphragm gas valve, PG-6 Pilot Generator, and T-80-4 Thermometer type Thermostat with night cut-off. For wall and floor furnaces, circulators, etc.



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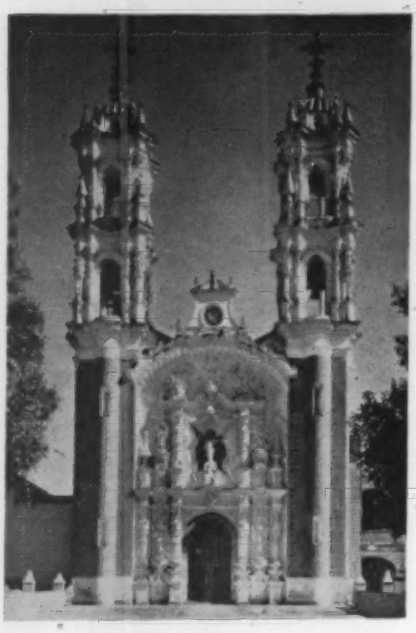
REQUIRED READING



Santuario de Ocotlán, Tlaxcala. From "The Story of Architecture in Mexico"

ARCHITECTURAL TRAVELOGUE

The Story of Architecture in Mexico. By Trent E. Sanford. New York 3 (101 Fifth Ave.), W. W. Norton & Co., Inc., 1947. 6 by 9 in. xviii + 364 pp. illus. $6.00.

Since travelers the world over spend a good part of their sight-seeing hours gaping at buildings which for one reason or another are supposed to be (and sometimes are) of interest, what could be more logical than a travel book written by an architect about architecture?

That is exactly what this book is. Mr. Sanford knows his architecture and he knows his Mexico. He can write about both with ease and interest. The result is a guidebook *par excellence*, combining history with description, human interest with archaeology. Only a hardened reader could finish the volume without acquiring a desire to visit the scene.

"The real story of architecture in Mexico," says Mr. Sanford, "is a very human document. It can be no mere catalog of stone and thatched palm and mud brick. It is a story of great human achievement, of human sacrifice, of barbarism combined with a high civic consciousness. It is a mystery story — a story of unknown origins, of ever-arriving and ever-vanishing peoples, of humble beginnings, glorious heights, and mysterious endings."

Like any good guidebook author, Mr. Sanford takes his readers on an escorted verbal tour, but he has broken with tradition in not planning his itinerary on a geographical basis. The route he follows is chronological. He devotes one chapter to a general description of the country, then plunges into the "architectural beginnings" back some 2000 years. He describes the pyramids and cities of the Aztecs, the Mayas and the Toltecs. He speculates on the people who built these often amazing structures — where they came from, what they were like, how they lived, what they did for amusement. He progresses through the centuries from the fortress churches and monasteries, the cathedrals and the palaces, down to modern times.

The book is lavishly illustrated, well supplied with maps. An appendix gives a list of the cathedral cities of Mexico, glossaries of architectural terms and general Spanish and Mexican terms, a particularly valuable glossary of Mexican place names (with their pronunciations), a bibliography, and an index.

FOR BETTER CITIES

Your City Tomorrow. By Guy Greer. New York (60 Fifth Ave.), The Macmillan Co., 1947. 5¼ by 8 in. xiv + 210 pp. illus. $2.50.

The city of tomorrow, this book predicts, will be not unlike the city of today — a prophecy which is refreshing amid all the prognostications of super-metropolis and colossal skyscraper. But the city of tomorrow, Mr. Greer is sure, will boast a greater openness and an increased livability.

Addressing himself chiefly to the general public rather than to professional planners, Mr. Greer makes no attempt to present a finished program. He discusses the growth of the typical American city and describes the decentralization which is characteristic of every good-sized town in the country. He reviews the planning attempts which have been made in the past half-century. He points out the problems which have to be solved, starting with the most pressing — housing. Occasionally he suggests or endorses a policy: a revival of the USHA "on a really adequate scale," for example. He wants to clear the way and provide the incentive for private enterprise to build at a rate of 600,000 to a million dwelling units a year, to be supplemented by 400,000 to 600,000 units of public housing. He comes out in favor of the W-E-T Bill.

Like most books on city planning, this one offers a number of planning outlines and requirements lists. It tells what several cities — notably Boston — have done in the direction of overall planning; it discusses blight, slum clearance, adequate housing, parks, etc.; it reviews such methods of securing proper housing for the low-income brackets as tax exemption and rent subsidies; it tackles the problems of financing the planning work and making possible the acquisition of land for development. Its chief value lies first in its common-sense approach and the logic of its suggestions, and second in its small size and readability — important factors in securing the interest of the lay readers for whom it is intended.

HEATING MANUAL

Panel Heating and Cooling Analysis. By B. F. Raber and F. W. Hutchinson. New York 16 (440 Fourth Ave.), John Wiley & Sons, Inc., 1947. 5¼ by 8¼ in. viii + 208 pp. illus. $3.50.

Professors Raber and Hutchinson have done an interesting thing in this manual on panel heating: they have prefaced an exhaustive technical treatise with a non-technical section simple enough to be of interest to the lay reader who just wants to know what panel heating is and how it compares with other systems. Consisting of four chapters, this introductory section furnishes descriptive material on the background of panel heating, the types of panels, the advantages and disadvantages of the system.

The second section, comprising the main body of the book, is, as the preface points out, intended as "a reference for design engineers and research workers, and a textbook for senior and graduate engineering students." It is highly technical, containing a detailed analysis of the whole theory of panel heating and cooling systems, and providing basic design data. Graphical methods for facilitating calculations also are included.

NEW EDITIONS

MORE LE CORBUSIER

Towards a New Architecture. By Le Corbusier. Translated from the French by Frederick Etchells. London, S.W.1 (13, Queen Anne's Gate), The Architectural Press, 1947. 5½ by 8½ in. illus. 15s.

Here at last is a new edition of a well-known volume which has not been available in English for a number of years. Because it was this book which first introduced Le Corbusier to the English-speaking peoples and which first brought the "modern movement" started on the Continent to the attention of the general public in England, this new edition is an exact facsimile (somewhat smaller in size) of the original English edition of 1927. No attempt whatever has been made to bring either the text or the illustrations up to date.

As would be expected of Le Corbusier, this 20-year-old text is as modern as though it had been written last month. The photos, though, show their age, particularly those of ships and cars and planes. Yet there is one sketch of "the airplane of tomorrow" which shows Le

(*Continued on page 30*)

He puts the Name before the number

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If you want additional information on these, or other G-E Wiring Devices, ask us — your General Electric Merchandise Distributor — or write to Section D62-65, Appliance and Merchandise Department, General Electric Company, Bridgeport 2, Connecticut.

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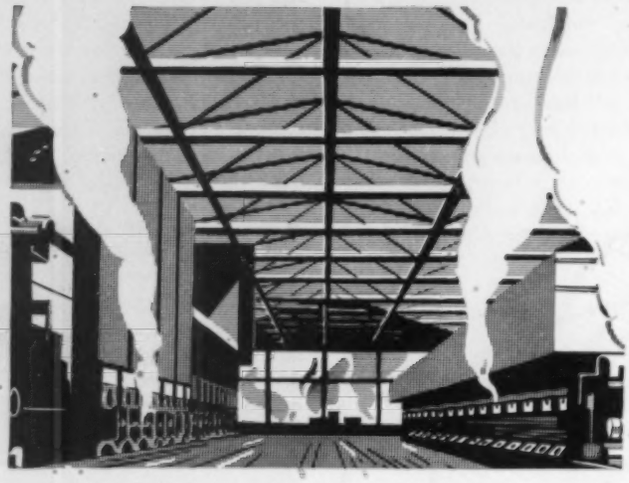

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1679 McCORMICK BUILDING, CHICAGO 4, ILLINOIS

REQUIRED READING

(*Continued from page 28*)

Corbusier's prescience as well as anything else in the book: it is a huge, triple-fuselage, eight-motor job not at all unlike some of the planes on the drawing boards at the present time.

GARDEN CITIES

Garden Cities of Tomorrow. By Ebenezer Howard. Edited with a preface by F. J. Osborn, with an introductory essay by Lewis Mumford. London, W.C.1 (24 Russell Sq.), Faber and Faber Ltd., 1946. 5 by 7½ in. 168 pp. illus. 6s.

This new edition of Howard's famous *Garden Cities* follows the second, or 1902, edition except for the reinstatement from the first of a few pertinent quotations. It also has a fine preface by Mr. Osborn reviewing the history of the volume and giving a brief biography of its author. Mr. Osborn's analysis of the Howard plan in the light of modern theories, together with Lewis Mumford's essay on modern planning, give the 50-year-old text a timeliness which may be surprising to readers who are not already familiar with the volume.

SURVEYING

Surveying: Theory and Practice. By John Clayton Tracy. New York 16 (440 Fourth Ave.), John Wiley & Sons, Inc., 1947. 5 by 7½ in. xxxii + 1280 pp. illus. $7.50.

Only indirectly is this a new edition of Professor Tracy's earlier textbook, *Plane Surveying*. Not only has most of the old text been revised and rearranged, but a great deal of new material has been added.

The manual has been carefully arranged for ready reference. Divided into four sections, it covers field work, office work, surveying instruments and standard surveys. A final section at the end offers 23 useful tables and complete instruction for their use.

AND MORE SURVEYING

The Principles and Practice of Surveying: Vol. II, Higher Surveying. By Charles B. Breed and George L. Hosmer. 6th edition. New York 16 (440 Fourth Ave.), John Wiley & Sons, Inc., 1947. 5 by 7 in. xxii + 674 pp. illus. $4.50.

Certain important revisions have been made in this most recent edition of another familiar textbook on surveying. The section on photogrammetric surveying has been entirely rewritten to include new developments in that field, and the order of presentation has been improved. The chapters on triangulation and astronomy have been brought up to date to conform to current practice. New problems have been introduced at chapter-ends throughout the book, and definitions and symbols have been revised to agree with those in use or recommended by various agencies.

ARCHITECTURAL

RECORD

"GET IN AND PUSH"

An eighty-year-old vehicle is bound to be a cumbersome affair, creaking at the joints, piled with useless baggage, with sprung axles and maybe its brakes rust-set — unless it gets a periodical overhauling, and an internal-combustion engine replaces the old Percherons. Perhaps jet-propulsion is needed. It may even be headed in the wrong direction for those who really want to go to town. (Any resemblance to any organization, living or dead, is purely and purposefully coincidental.) At least, or at last, it has had the temerity and the tolerance to ask for a candid shot of itself so that it might see itself as others see it. It got that candid shot! Carl Koch delivered it most courteously by invitation at the A.I.A. Convention in Grand Rapids. (For the text of his remarks, see Page 103.)

The picture, taken with strong and carefully focused lights, showed up the shadows and furrows on the erstwhile noble features, blemishes indicative of past sins both of commission and omission. There were lines of reaction, of negative action, of no action. And the attitudes struck toward housing, public relations, government agencies, industrialized housing, competitions, and young practitioners, were found by the younger group to be stiff or downright ugly.

The picture was a shock to some, a revelation to others, a shot in the arm, a challenge. While some denied or disavowed the portrait, or rose to defend the subject, "No, we don't look like that — we're much better looking," others felt, "We need a rejuvenation treatment and some healthful exercise." The effect of the candid shot was and is salutory, rude-awakening or not. It was awakening, and even those who defended the old vehicle joined in voicing the invitation to "get in and push."

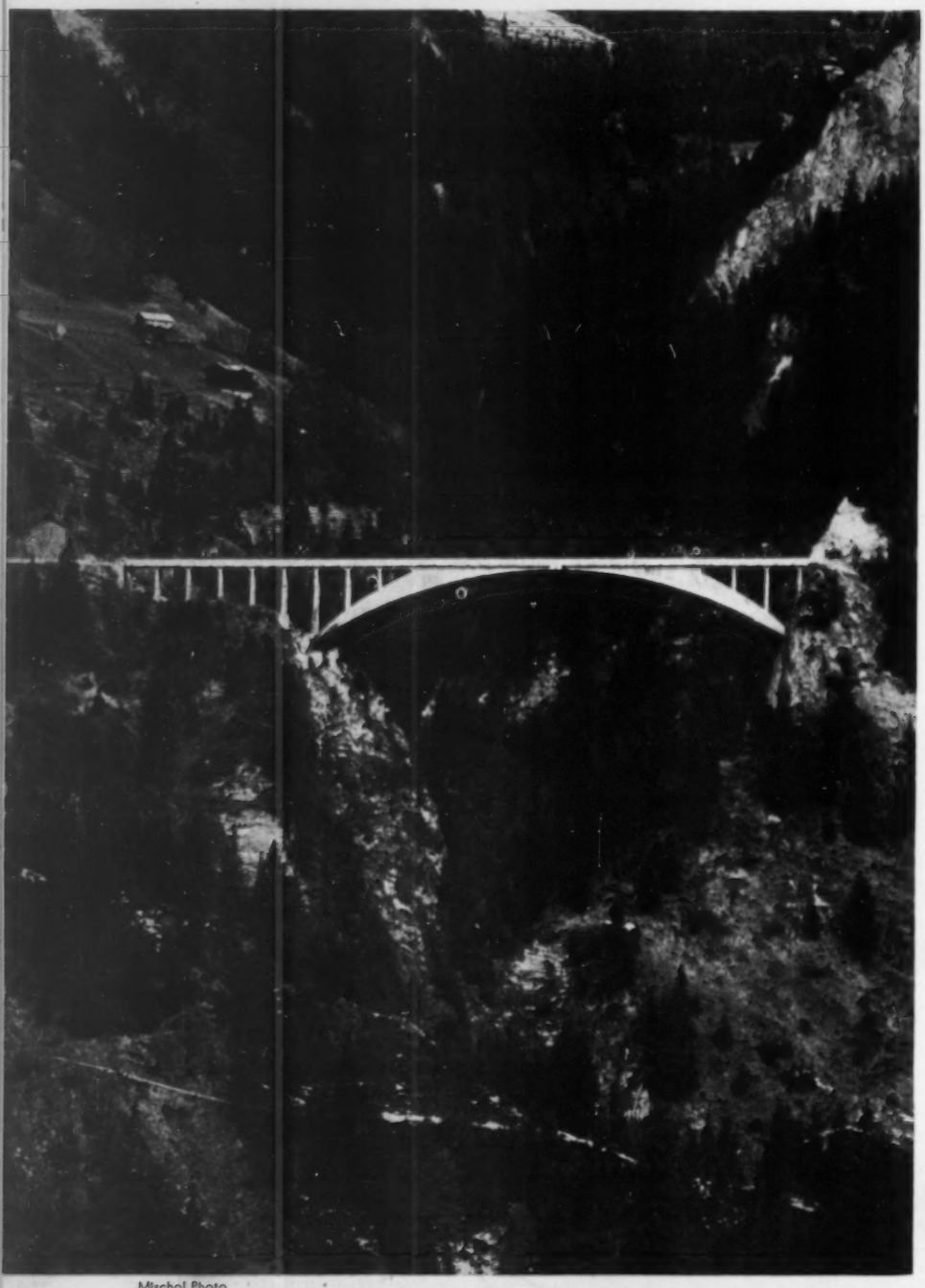
Defenders of the venerable vehicle and advocates of overhaul both had, and will have, their say. We invite frank and open discussion — there is room for difference of opinion, directly opposite opinions. What is yours? Voicing your convictions is one way to "get in and push."

In one direction, at least, the old vehicle made real progress in living up to its pledge to make the profession "of ever greater service to society." I refer, of course, to the pre-convention seminars devoted to the discussion of the problems of Schools, Hospitals, and Urban Planning. The exchange of ideas, information, and experience — the thrashing out of theories and practices — made a distinct contribution to better architecture. There was universal acclaim, and a demand for the continuation and expansion of the seminar program, nationally, regionally, and locally. The program was hailed as the most significant development in architect-education since the invention of the printing press. It is a push on the constructive side of A.I.A. activity. Others will develop as more accept the invitation and the challenge to "get in and push." In the meantime — what are your ideas of the issues raised by Carl Koch's candid shot?

Kenneth K. Stowell

EDITOR

Robert Maillart built bridges using tensile and compressive properties of reinforced concrete to the ultimate, and their grace is inherent in the structure. So radical in theory were they to the engineers and so unusual in form to the public that, for the most part, their building was confined to remote Alpine valleys. Here, it is said, Maillart found mountain workers eager to cooperate in effecting the considerable economies implicit in his engineering theories and manipulation of materials



Mischol Photo

P. Boissonas Photo

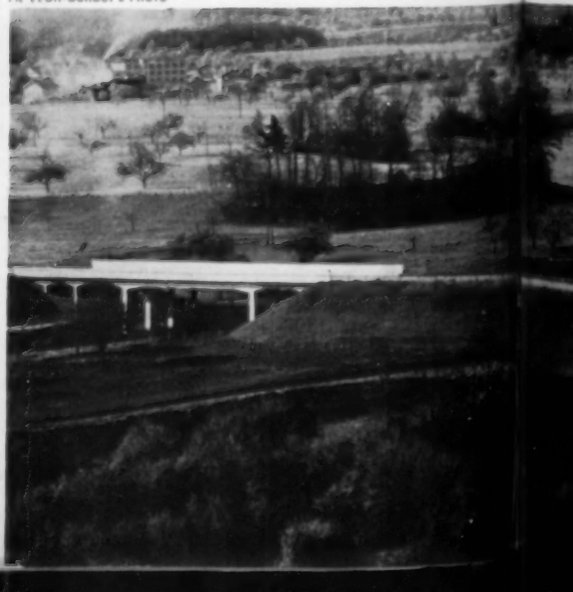
ON THE FORCE

By Sigfried Giedion

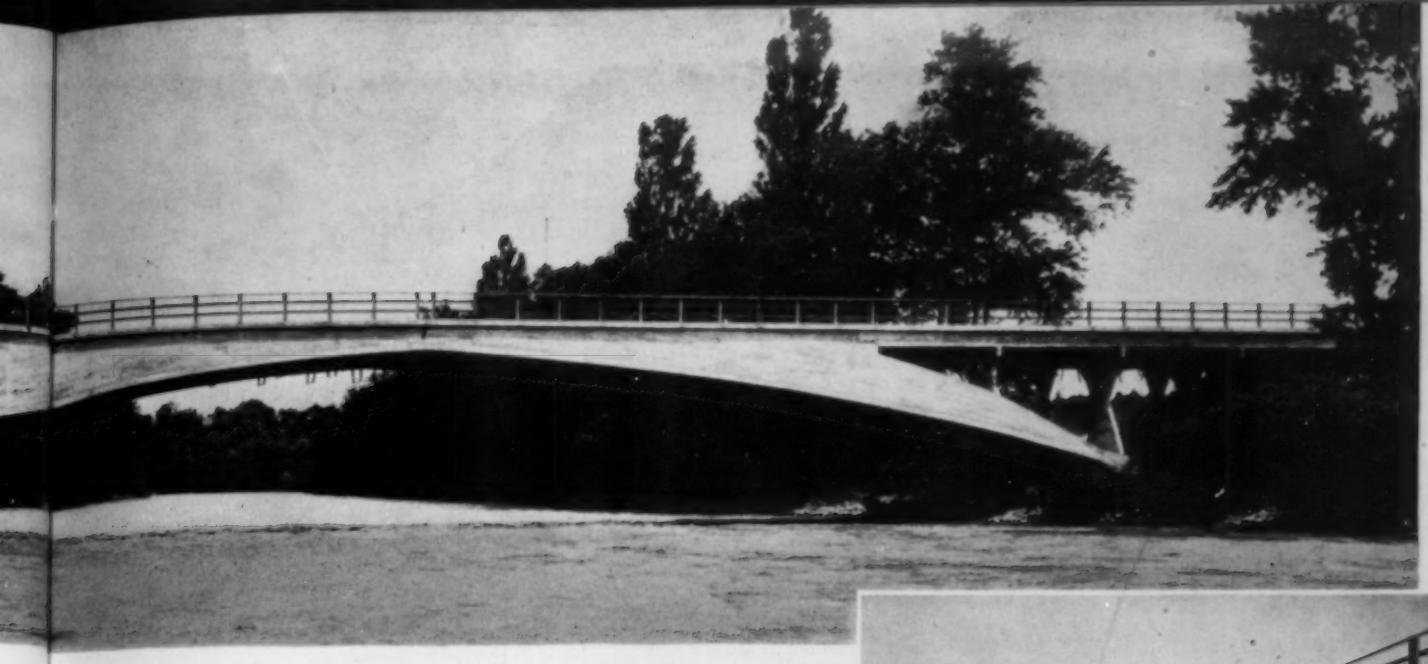
The appeal on these pages for a world-wide reform in architectural education was made by Sigfried Giedion, eminent Swiss critic, at the recent Princeton University Bicentennial Conference "On Planning Man's Physical Environment." The reproductions here are from photographs, assembled by Dr. Giedion, to be part of an exhibition of Robert Maillart's work shortly to go on nationwide tour through the Museum of Modern Art, New York City.

Robert Maillart, 1872–1940, after studying engineering at Zurich, entered the firm of François Hennebique, pioneer in reinforced concrete. Between 1912 and the Revolution, Maillart built factories in Russia, returning thereafter to build bridges in his native Switzerland. At his death he was little known or appreciated, particularly in the world beyond the Alps

H. Wolf-Bender's Photo



Few actual drawings of his bridges are extant since so many details came extemporaneously during his operations at the site. Directly above is the three-hinged-arch Salgina Bridge (1930) near Schiers. Spread at top is a bridge over the Arve near Geneva with detail of the underside, showing the system to be one of three parallel three-hinged arches (1937). At right is a bridge over the Thur near Felsegg, also with detail of the underside, showing two three-hinged arches in parallel (1933)



E OF ESTHETIC VALUES

P. Boissonas Photo

THERE can be no doubt that the purpose of this session is to look beyond the utilitarian and functional values of the human environment and to assume the existence of esthetic and spiritual values.

To begin with, we don't believe that esthetic values can be arbitrarily added to or subtracted from an object. Esthetic values are inherent in things. They emanate from them, somewhat as odors do from food or from flowers. And like intangible perfumes they determine our sensitive or emotional reaction.

Esthetic impacts influence us at all moments. Consciously, or in most cases subconsciously, they provoke friendly or hostile reactions. They escape from our rationalistic strongholds, directly back to our emotions and therefore out of our control.

This means esthetic values are no simple trimmings but indeed have their roots in the depth of the soul. Their impact on man's decisions reach even into the

H. Wolf-Bender's Photo

Ryner Photo

D. Engler Photo

Left: Chatelard Aqueduct (1925–26), Canton Valais. In this structure, the arch starts its spring from the abutments with more or less orthodoxy, to fuse in mid-span with the box girder which itself, economically, carries the water. Above:

most practical problems, into the shaping of things of daily use — cars, bridges — and above all, of our human environment.

If man's esthetic or, as we would prefer to express it, if man's emotional needs are not satisfied, he will react immediately. He will reject most violently the slightest deviation from his esthetic standards. He will do everything in his power to shape things according to his emotional convictions.

For Example:

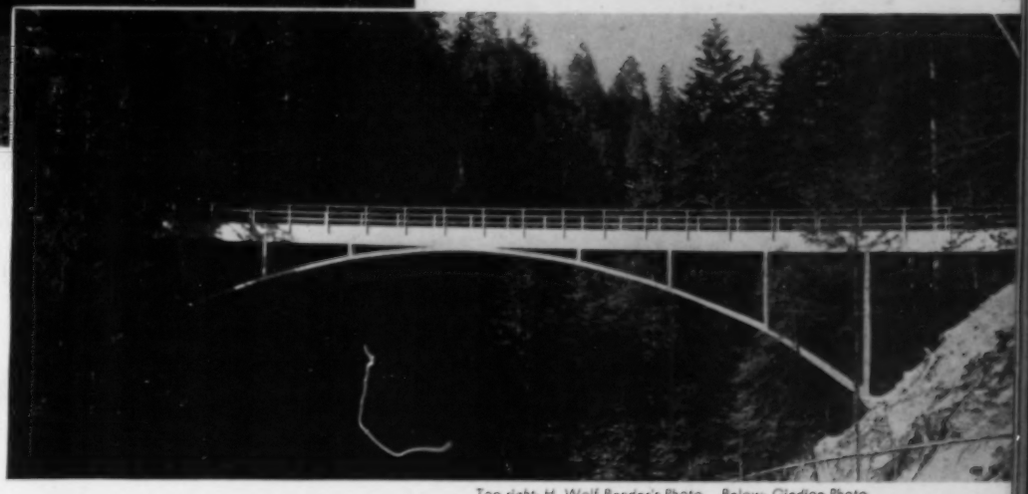
We have in Switzerland the case of Robert Maillart, the bridge-builder who died without the opportunity to erect in any of our cities an arch in the pure forms which he mastered like no one else. His bridges were permitted only in remote mountain valleys, because they were cheap and, above all, because nobody was supposed to see them. Why? Their extreme lightness and elegance offended the taste of the laymen and the specialists. They hated their soaring strength. Said one: "We have had enough of this puff pastry."

In Berne, where Maillart's bridges had to span the river Aare, he was forced to disguise them completely with heavy granite stone-work, thus annihilating his own elegance. The officials preferred massive bridges. It made no difference whatsoever that this massiveness was very costly. It satisfied their emotional needs.

Today we can observe this astonishing dictatorship of esthetic values or emotional needs in every country. One can admire the officials concerned with building parks and highway systems for the keenness of their conceptions, but the moment they have to do with architecture their keenness vanishes. We then see them clinging anxiously to 19th-century habits. This is a world-wide official disease.

The emotional training of the average man lags far behind the advanced nature of his thinking. The whole disaster of 19th-century architecture derives largely from this divergence. And, as T. S. Eliot says, "The 19th century still lingers on into the 20th!"

In our period, feeling seems to be much more difficult than thinking. Man is able today to invent nearly everything he wants in science and in all kinds of gadgets. But as soon as we approach the emotional, or if you prefer, the esthetic sphere, we immediately meet the strongest resistance. This was not always so. It was often the reverse. Artists like Michelangelo, in spite of their keen and revolutionary inventions, were conscripted by the Pope like present-day atom-physicists by the government. But scientific thinkers like Galileo were condemned and outlawed for their discoveries, just as today



stiffened-arch foot-bridge with reverse curve, near Wuelfflingen (1933). Above, right: Cement Industries Hall for the Swiss National Exhibition, 1939; arch spans 55 ft., is 2½ in. thick. Right: Schwandbach bridge near Schwarzenberg (1933)

Top right: H. Wolf-Bender's Photo. Below: Giedion Photo

we exclude the inventors in the emotional field — creative artists — from public activity. The result is that esthetic values born out of the spirit of our period are ignored.

Humanity vs. *Technology*

Today the immediate impact of esthetic or emotional values has grown to the utmost importance. Why? Suddenly we have become aware of our predicament. Suddenly and unavoidably, human needs must dominate the problems of production.

The task ahead of us seems nearly impossible and yet we must accomplish it. We must simultaneously shape elements and synthesis. Town planning, the highest expression of architectural synthesis — and not only in respect to the field of architecture — is normally mastered at the peak, or even at the end, of an era. So it was in Greece. So it was in the 13th century with its frantic founding of cities. And so it was in the late 18th century when urbanism of the highest spatial order was within the reach of every speculator.

But what happens today? Building techniques, as compared with other techniques, are lagging behind. How should people be housed? Flats, single houses? The very existence of the city itself is questioned. Look at the esthetic uncertainty on the drawing boards the moment a larger synthesis is required, as in civic centers. And yet we have to work simultaneously at the beginning and at the end. For there is a revolt in the making, a revolt which can be no longer suppressed. This is the revolt of the humiliated human instincts.

May I draw a pertinent conclusion? We have to prepare the next generation for these enormous tasks lying ahead. The present curricula are insufficiently adjusted to the necessities of this period. The students feel it strongly, sometimes more strongly than their professors. In every country the same question pops up: "How should our training be organized so that we may realize the social, moral and emotional demands of our work?"

I will illustrate from my own field. History is often forced on students as if nothing had happened in architecture for the last hundred years. History is taught as if it were static, not dynamic. But history is dynamic. The past lies in us and acts in us. As Henri Bergson, the French philosopher whose shadow looms larger with the years, puts it, "the past gnaws relentlessly into the future." We must forge history into a weapon which will enable the coming generation to measure where they stand, to judge their strength and their weaknesses.

A world-wide reform in architectural education is necessary.

Light exterior surfaces are Buffneato marble, dark surfaces, Virginia greenstone. Metal trim is lacquered where dark, stainless steel, where light. Suspended tempered-glass sign has cast aluminum letters, sandblasted Santa Fe trade mark. Special display case (far right) is 3/8 in. plate glass with no metal frame, lighted by louvered cold cathode tubes in the channel, an extension of the door frame. Photo below: special glass on this side gives protection against sun, a problem around noontime in Los Angeles

IMPLEMENT TO THE LURE OF DISTANCE

Santa Fe Ticket Office, Los Angeles

Maynard Lyndon, Architect

Julius Shulman Photo

THE purpose here was to provide "a city ticket office for the Santa Fe, distinct from sales counters in the Union Station some distance out of town." It opened recently on "Transportation Row," in company with new offices for T.W.A., United, Matson, and other air and steamship lines. The Union Pacific RR has occupied space on the same block for several years.

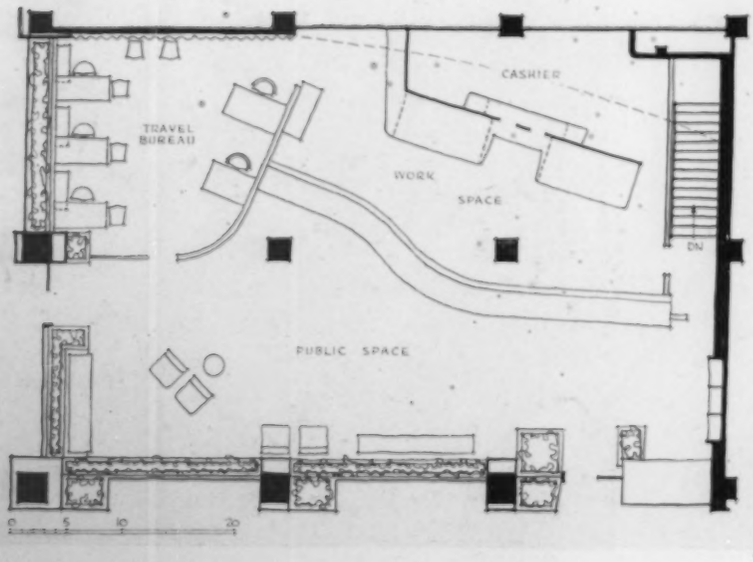
The effect on the public of the new office should be to advance considerably the romantic resurgence of Railroading, whose mighty whistles in the night are still among the most stirring declarations of man's achievement in bridging time and distance. It shows, moreover, numerous features of utility and economy to insure the efficiency of its purely practical operation.

For example, the enclosed consultation area (see overpage) for planning the "more elaborate itineraries and travel schedules, a feature new to Santa Fe" — emphasizes the "leisure, comfort and personal service" implicit in traveling by rail. The large windows were provided not only to permit maximum daylight for the entire office, but also to reveal dramatically the busy activity inside, and the stir and thrill of preparation for travel. They also disclose to broad view the Grand Canyon mural on a suspended plaster panel. Back of the display case (see right) is a small desk for the baggage agent.

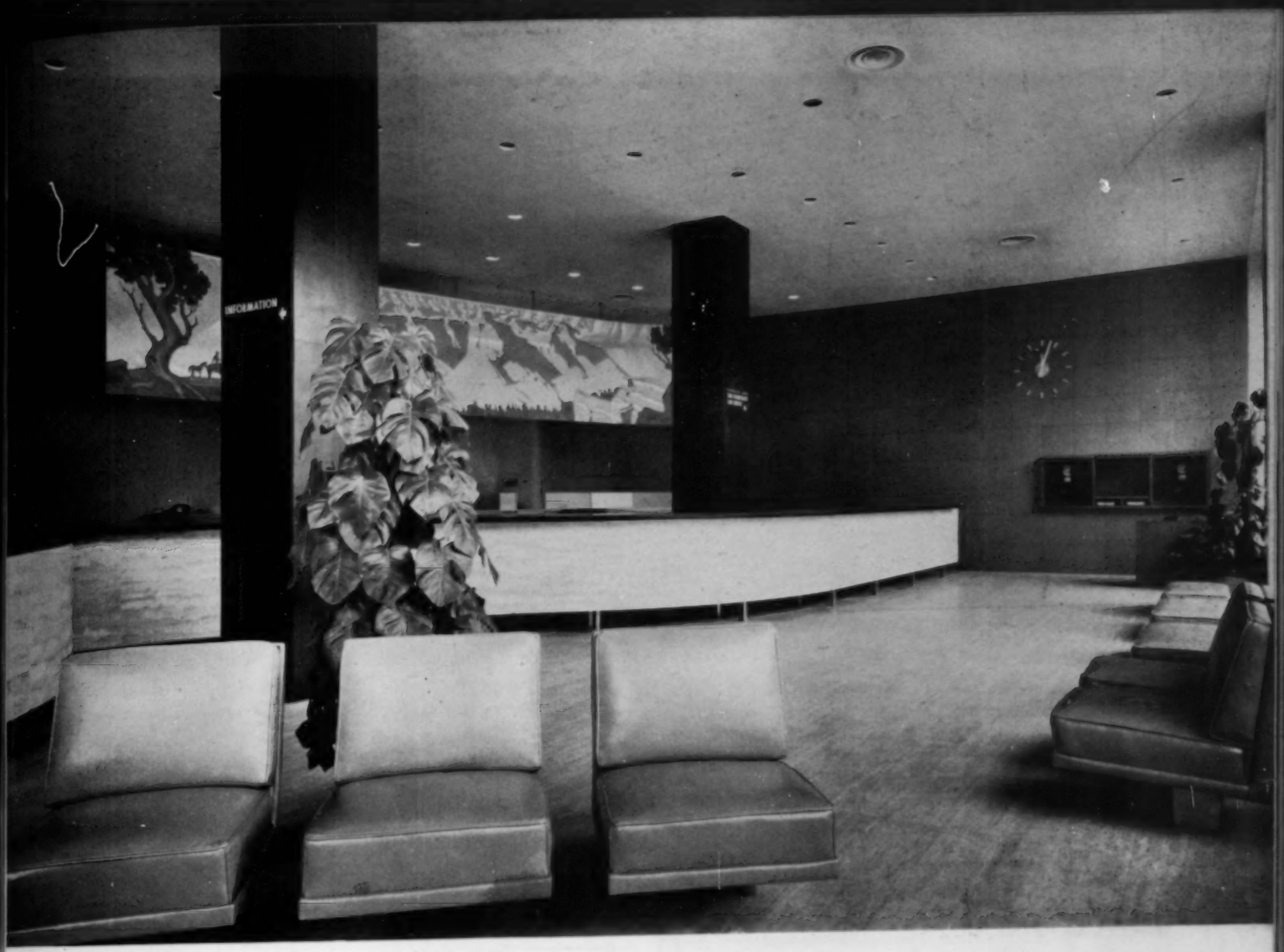
Above and below: Merge Studios Photos

Merge Studios Photo

Above: ceiling is perforated acoustical board with trimmed edges to eliminate v-joints, painted pale yellow. Floor is Roman travertine. Above, across-page: cantilevered seats are supported by plates bolted through the under floor, are covered in coral tan leather to match the ceramic tile wall in background. Face of main counter is travertine; interior columns and top of counter are polished Belgian black marble. All other work surfaces in the main area and wall behind the main counter are blue-gray lacquer. Main counter has eight selling stations, each with stool, telephone, etc. Recessed light units have focussing lenses, can be serviced through 6-in. open ports in ceiling



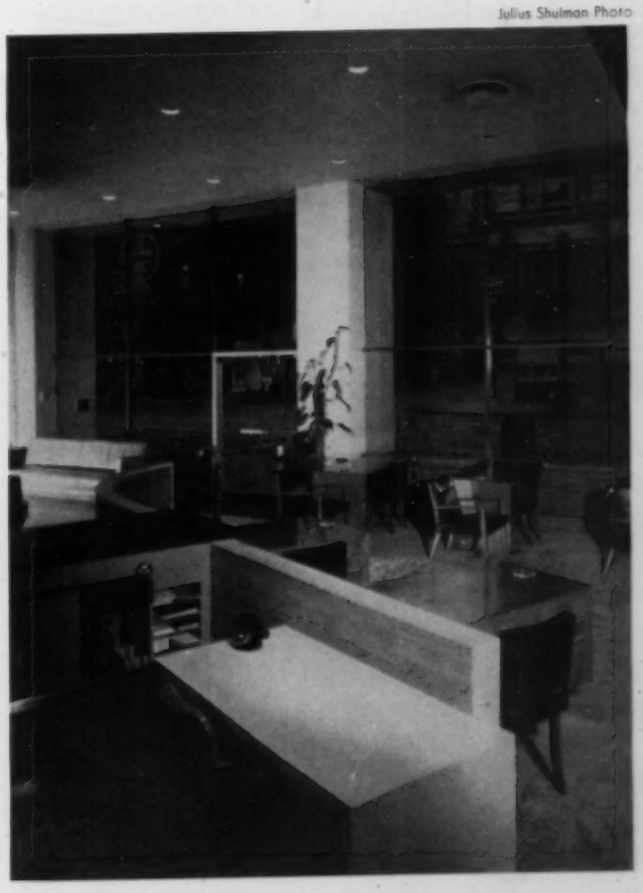
Julius Shulman Photo



Merge Studios Photo

Below, across-page: "Make-up" counters in back have hundreds of drawers for strip tickets; slide-back panels simplify drawer locking. Below and right: glass gate has special gravity supports and hinges; aluminum hand grip rotates. Woodwork here is bleached walnut; chairs, black kid; lime green rug, drapery

Julius Shulman Photo



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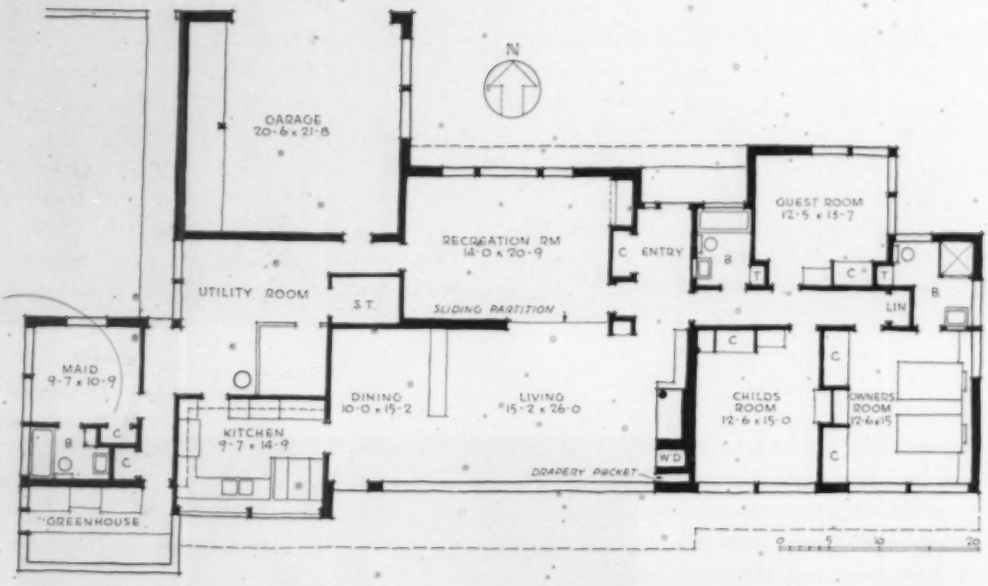


The convenient plan with every facility for gracious living is arranged to utilize the maximum of solar heat. Owner's room, child's room, living and dining room, kitchen and greenhouse all face south with maximum glass areas. The shading sun visor for summer use is partially fixed, partially movable, to allow full sun penetration when its heat is appreciated

Hedrich-Blessing Photos

SOLAR + RADIANT PANEL + WARM AIR = COMFORT

RESIDENCE OF HOWARD M. SLOAN, GLENVIEW, ILL.

David Searcy Barrow, Architect

As one of the foremost pioneers in the practical use of solar and radiant heating, Mr. Sloan is fully aware of both the advantages and disadvantages of such heating. He has built and lived in houses combining solar heating with a radiant panel system of pipes imbedded in the concrete floor. Always a perfectionist, he has in this new house sought to combine all the best features of solar heating, radiant panel heating, and warm air convection in one easily controlled, highly responsive system so devised also as to eliminate the least desirable features of each system. The result is simple, logical, ingenious, unique — and successful. And, what is more, summer cooling is provided.

A glance at the diagram and photographs on page 95 will explain the combined system. Solar heating is supplied on the south side by the expanse of thermopane windows mounted in wooden sash. Below these windows one sees in the photograph the base grilles along the entire length, through which warm air gently rises, providing warmth, ventilation, and eliminating stratification. The space under the entire floor forms a plenum chamber some 16 in. high, constantly fed with warm air. Thus the entire steel floor (covered with ½ in. of Floorcrete, and the rug cushions and carpet) becomes one great radiant heating panel. With no concrete mass to heat or cool, "heat lag" is no longer a factor and the system responds quickly and automatically as solar radiation changes. The temperature of the steel floor above the plenum chamber during cold weather is only about 76°.

A system of dampers controls the flow of warm air from the gas-fired air conditioning unit. This unit has an input capacity of 120,000 Btu's for heating operation, and a capacity of 5 tons of refrigeration for cooling. The unit contains a gas-fired boiler or steam generator which during the winter cycle draws steam to a heating coil ahead of the fan section of the unit assembly. During the summer cycle, steam is delivered to the absorption refrigeration unit of the unit assembly. This one unit provides, therefore, the heating, humidifying, air

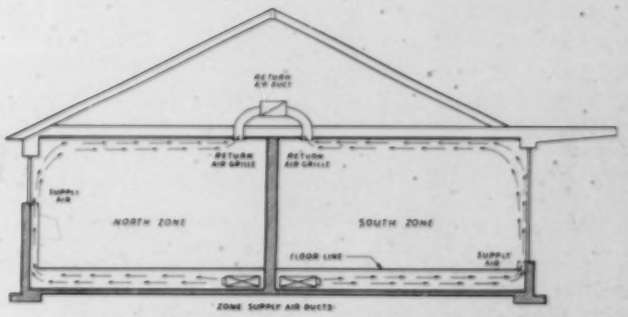
The living room and dining room are completely open to the southern view. Notice the grilles, at the base of the windows, from which warm air gently rises. Note also the shut-in effect, in the small photograph below, produced by traditional fenestration. The photographer's lights minimized the dark effect produced by these false panels which were set up to demonstrate the comparison of the new and old

cleaning, circulation and ventilation in winter — and in summer, cooling, dehumidifying, air cleaning, and ventilation.

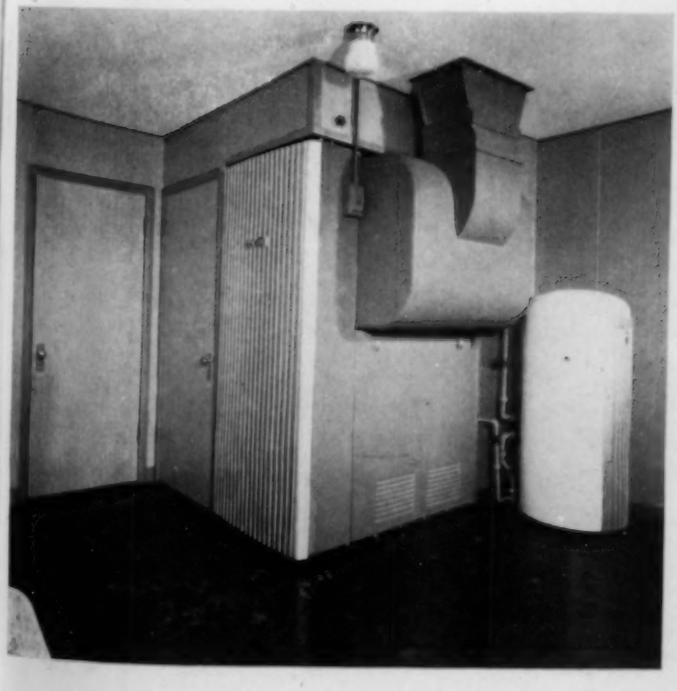
Six separate ducts supply the warm air (or cooled air) to the six plenum chambers under the various rooms, the foundation footings forming the divisions between plenum chambers. Insulation below the plenum chamber is provided by 4 in. of cinders, covered by a 3-in. vermiculite insulating concrete slab which is topped by a moisture barrier of waterproof paper mopped with asphalt.

In addition to the recirculating of the air, which is returned at the ceiling to the conditioner, 300 cu. ft. per minute of fresh outside air is introduced. The air supplied by the conditioner on both the

heating and cooling cycle is 2000 cu. ft. per minute. Because of the large dispersion through the grilles, air motion is positive, but never produces a feeling of draft, and air stratification is prevented. Naturally the structure of the house itself is thoroughly insulated.

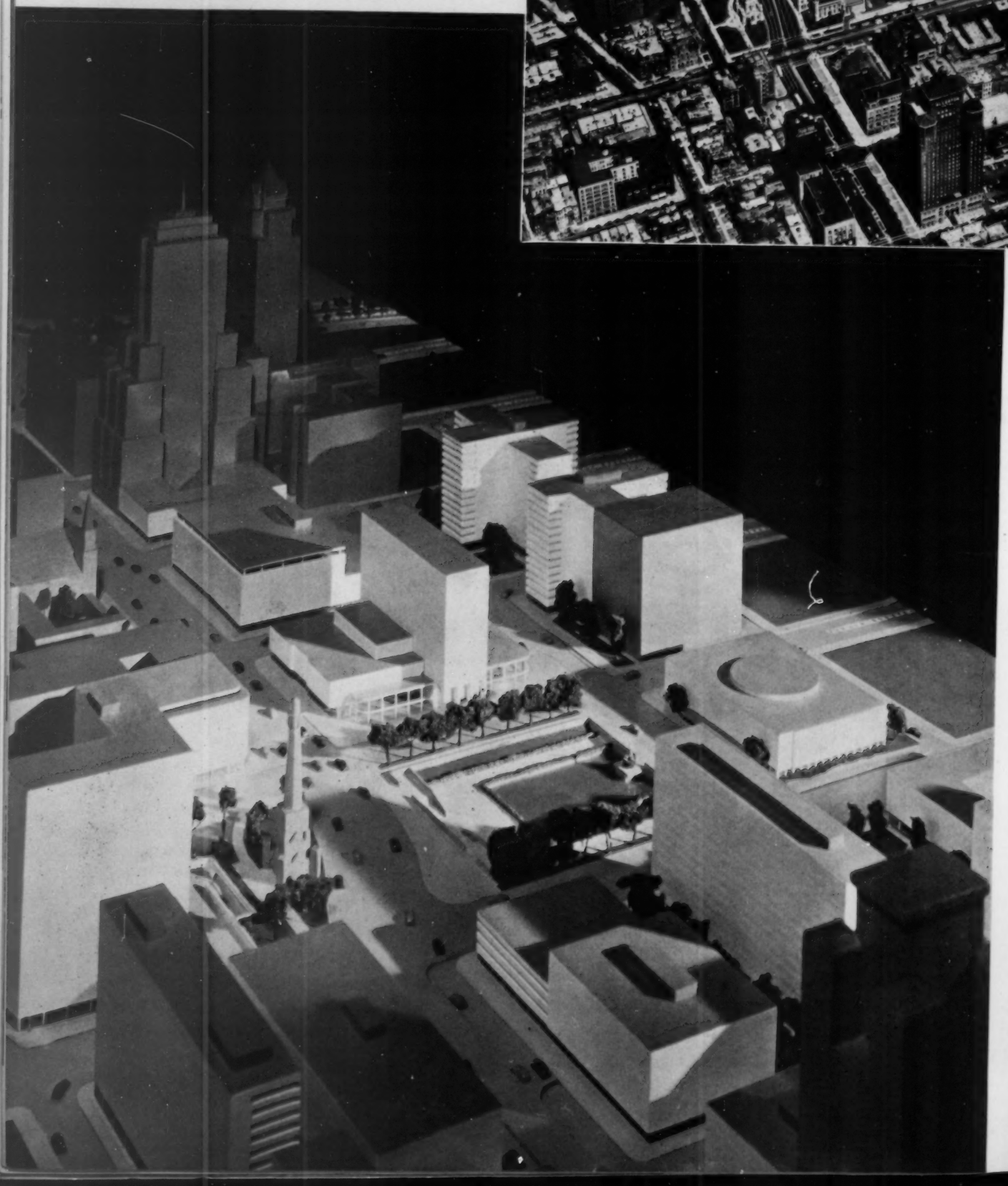


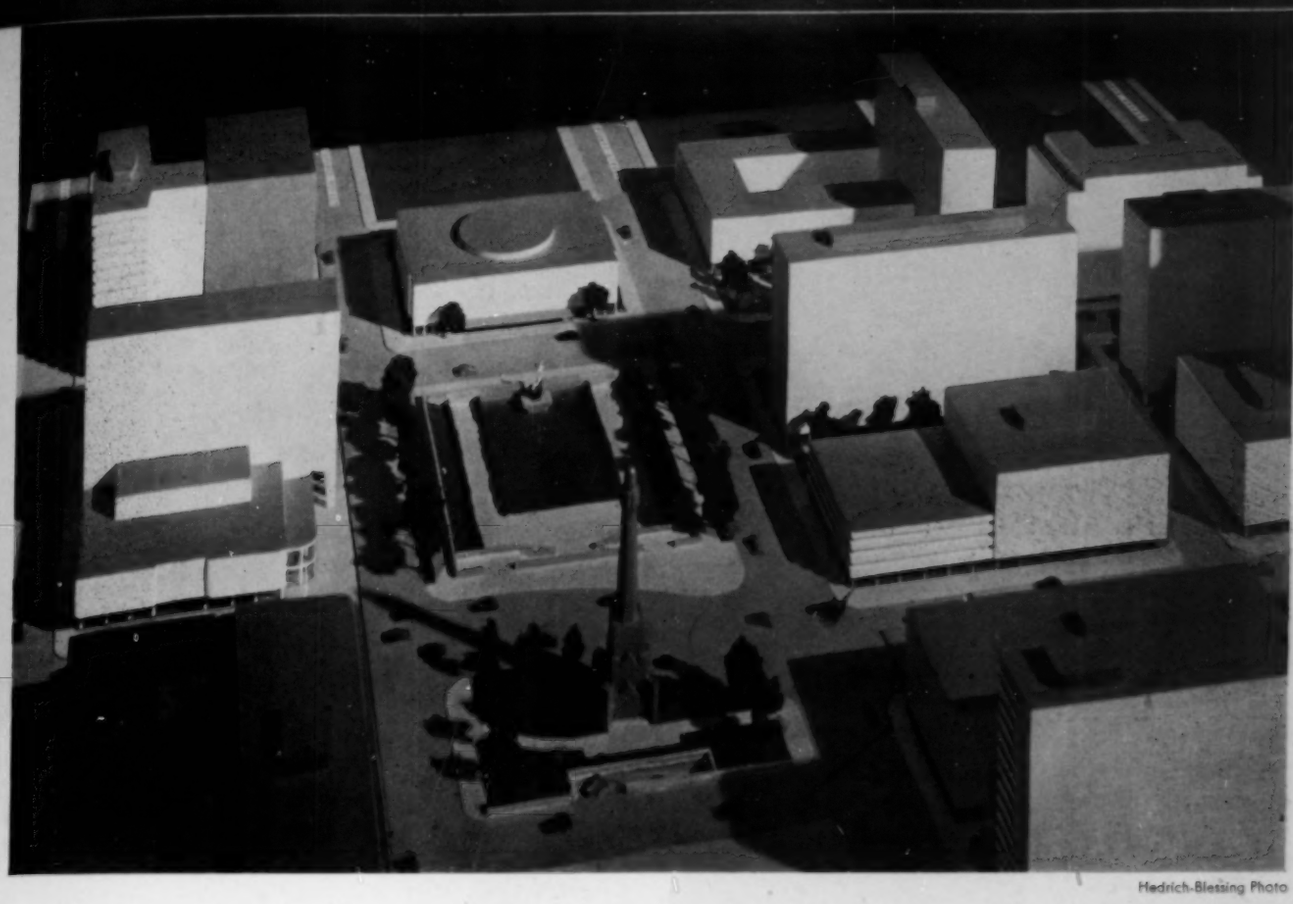
Above: the north side of the living room with dining portion screened at the left. Exhaust grilles are shown in the ceiling. Below: the complete Servel air-conditioning and heating unit, which is located in the utility room. Note return duct from the ceiling. Right: view of floor and underfloor construction, showing all-steel floor with supply duct and plenum chamber space below



Right: air view shows pump station (lower center), focal point of "Magnificent Mile" proposal. Photo of model below shows approximately same area with pump station replaced by plaza and ice-skating rink. "X"-plan buildings (upper center) are apartment houses, among new structures proposed for replanned area

Below: Hedrich-Blessing Photo. Right: Chicago Aerial Surveys Photo





Hedrich-Blessing Photo

MAGNIFICENT MILE FOR WINDY CITY

City Plan Proposal for Upper Michigan Avenue, Chicago

Holabird & Root, Architects

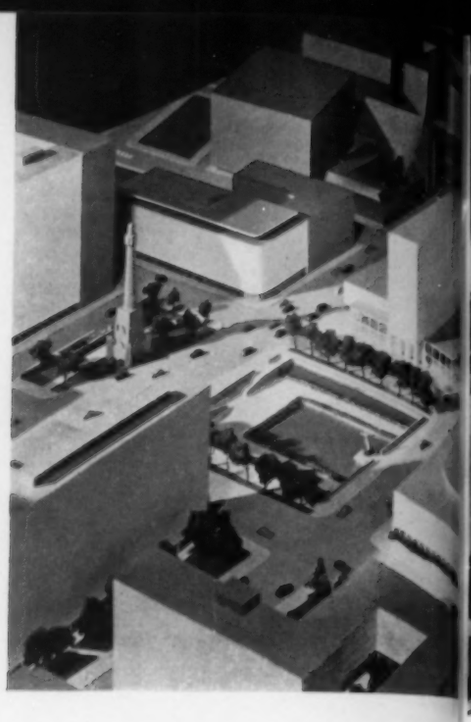
CONCEIVED as a coordinate in the Chicago City Master Plan, "the initial impetus of which has been throttled by depression and war," according to John W. Root of the architectural firm acting as consultants to Arthur Rubloff and Co., promoters of the proposal, "this dramatic private project will perhaps encourage the city, its administration, and public to carry forward the other vast improvements so sorely needed."

The proposal, as illustrated in photographs of the model on these pages and the two following, would affect an area of about a mile along Michigan Avenue from the river to Oak Street, and east and west between St. Clair and Rush Streets. Alliterative enthusiasts have applied the title "Magnificent Mile."

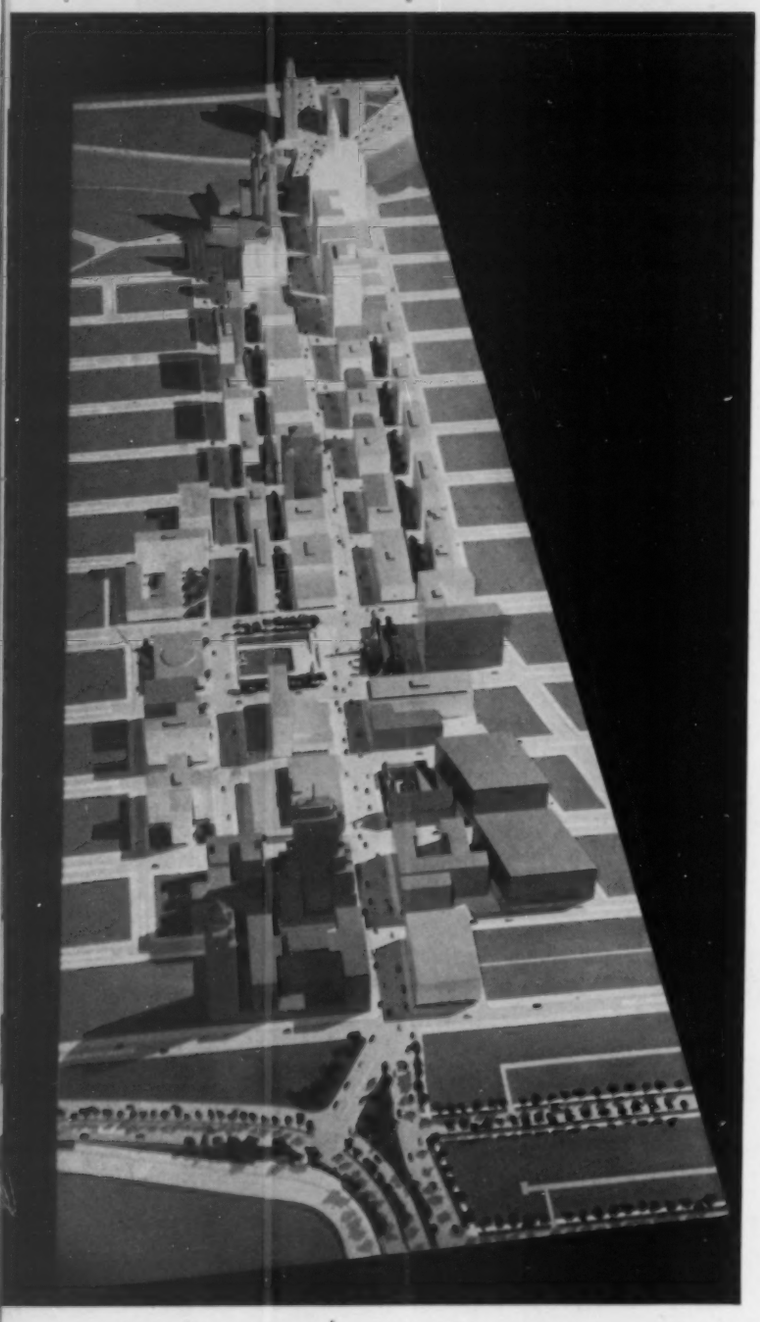
Focus of the plan is on the city pumping station at the northeast corner of Michigan and Chicago Avenues (lower center in air view inset, across page). Plans call for demolishing this landmark and relegating its function, if necessary, to a subterranean station. The Water Tower, its historic companion piece across Michigan Avenue, will remain "as a monument to the spirit which built a greater Chicago after the fire of '71." Dropping the pumping station below ground level might be coordinated, it is believed, with another major feature of the plan: construction of a two-level underground parking facility for approximately 1500 cars at one time (see next pages). Need for a pumping station in this area, however, would be eliminated entirely, the planners point out, by constructing the projected north-side filtration plant east of the Outer Drive.

At street level above the parking accommodations — to be built and operated by the city — the proposal calls for a landscaped plaza, with an ice skating rink in the tradition of New York City's Rockefeller Center. To the east of the plaza, the construction of a civic hall of music is contemplated.

From north to south, store and office buildings of about seven stories are planned, their fronts to be on Michigan Avenue. Behind them, cutting down the centers of present blocks and paralleling Michigan Avenue, would be landscaped promenades, not accessible to automobiles but presenting considerable added store



Above view of model is from southeast showing open-front restaurant overlooking plaza; water tower to west (left). Bisected

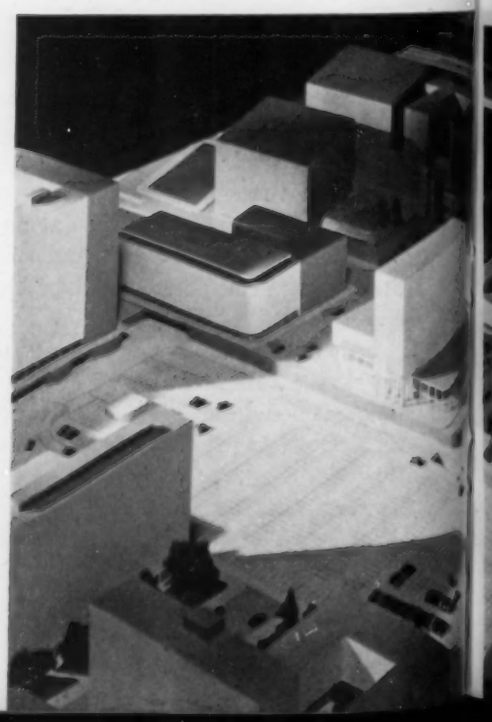


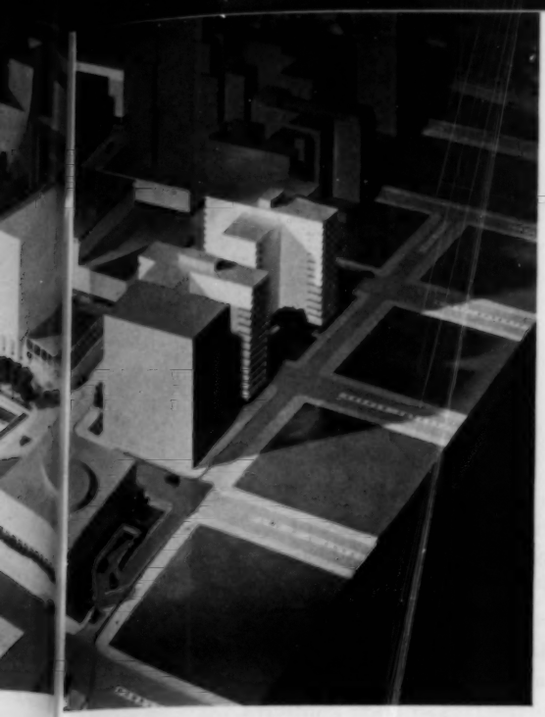
View of "Magnificent Mile" south along Michigan Avenue

frontages to pedestrian shoppers. Between the promenades and St. Clair and Rush Streets on the east and west, taller office and apartment buildings are envisioned, with shops on their ground floors facing both on the promenades and on the boundary streets. Facing on the plaza and skating rink, at convenient points, would be open-front restaurants.

New buildings planned for the area by participating interests include a six-story structure for Saks Fifth Avenue, designed by Holabird & Root, and a store for

View of model below indicates extent and arrangement of two-level parking garage, proposed for the city to construct and



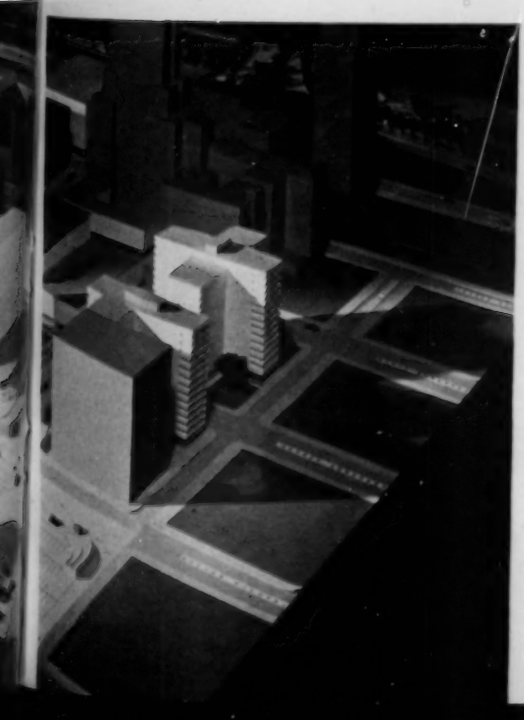


building in foreground is civic hall of music; note ramp to parking garage leading off St. Clair, eastern boundary street

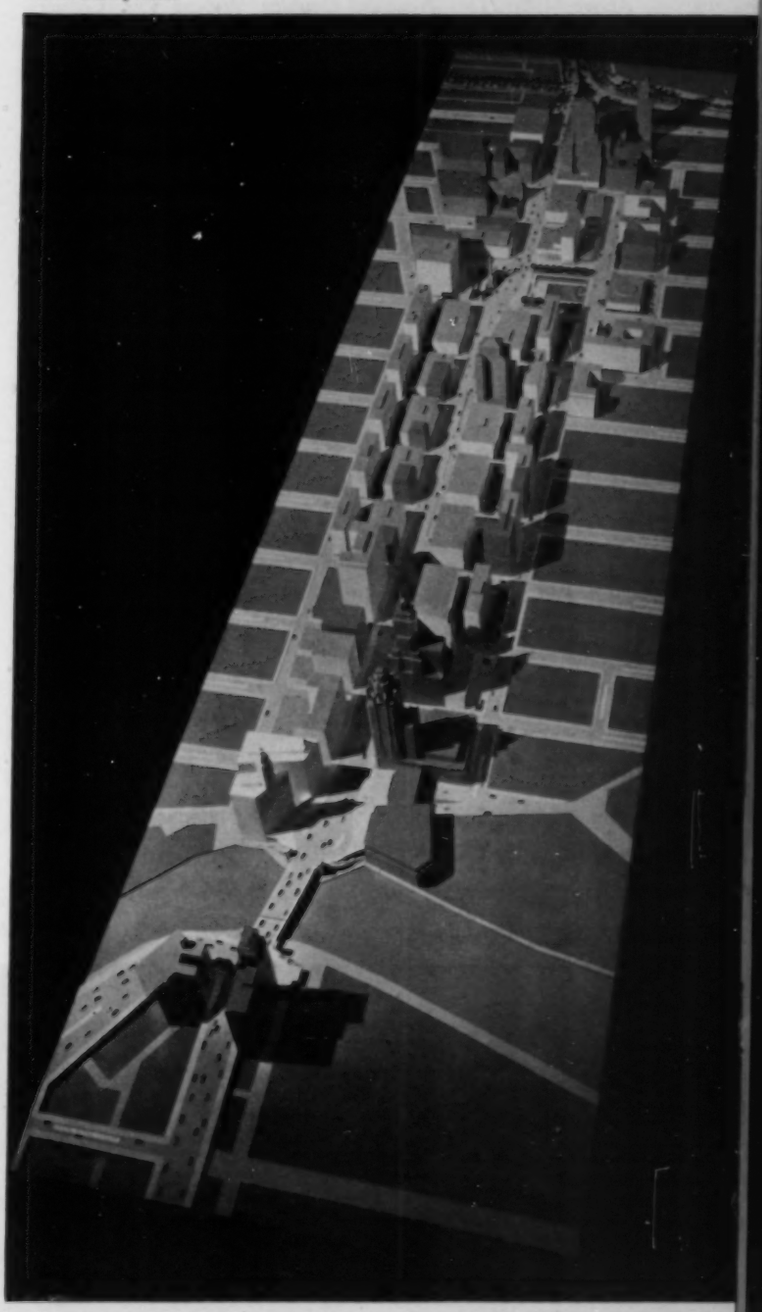
Bonwit-Teller, for which Shaw, Naess and Murphy are the architects. The first of these includes parking plans for 250 automobiles, the other for about 150. In addition to the parking facilities already mentioned, the planners suggest the city utilize the nearby Lake Shore Playground for an underground garage to contain 3000 car stalls.

The planners also advocate extension of the North Michigan Avenue "double deck," below present street level, from Grand to Chicago Avenue.

operate. Providing spaces for 1500 cars at one time, it should perhaps be able to accommodate 5000 a day on a turnover basis



Hedrich-Blessing Photos



This view of model shows proposal north from the river

Left: Samuel Kravitt Photo. Right: Powell Photo

Above, left: New President Douglas William Orr, Connecticut. Right, Vice President Searle H. Von Storch, Pennsylvania

THE SEVENTY-NINTH

Above: Mr. and Mrs. Eliel Saarinen, Joseph D. Leland, Mrs. Edgar I. Williams, and Treasurer Charles F. Cellarius

Above: Mrs. Raymond J. Ashton, Mrs. Kenneth C. Welch, President Douglas William Orr, and Edward C. Kemper

THE biggest convention yet, and one of the liveliest! Over six hundred delegates, members and guests gathered at the Pantlind Hotel, Grand Rapids, to determine policies, programs and presiding officers for the Institute's 81st year, to renew old friendships and make new ones, and otherwise to inform, educate, agitate or amuse themselves or their confreres.

First let's have a few convention highlights:

Eliel Saarinen, on receiving the Gold Medal of the Institute, responded with his inimitable charm, clear-thinking and sound philosophy, drawing an analogy between music and architecture.

The "moss-scraping" session on Contemporary Trends, shepherded by Walter F. Bogner, at which —

Guy Greer's self-styled sermon extolled the spiritual opportunities inherent in the coming decentralization with its physical changes in urban and regional patterns.

Henry Wright explained that the public wants leadership and inspiration from its architects, and showed where it *is* — and *is not* getting them.

Ernest Kump stressed the dual quality of true functional design — the emotional and the utilitarian:

Counterclockwise from upper left: Purves, Edmunds, Kaelber, Miss Manley, Segoe, Justement, Ashton, Haskell, Orr, Mrs. Edmunds, Churchill, Cellarius, Mrs. Kenneth Welch, Leland, Wurster, Richard Koch, Mrs. Ashton, Robinson

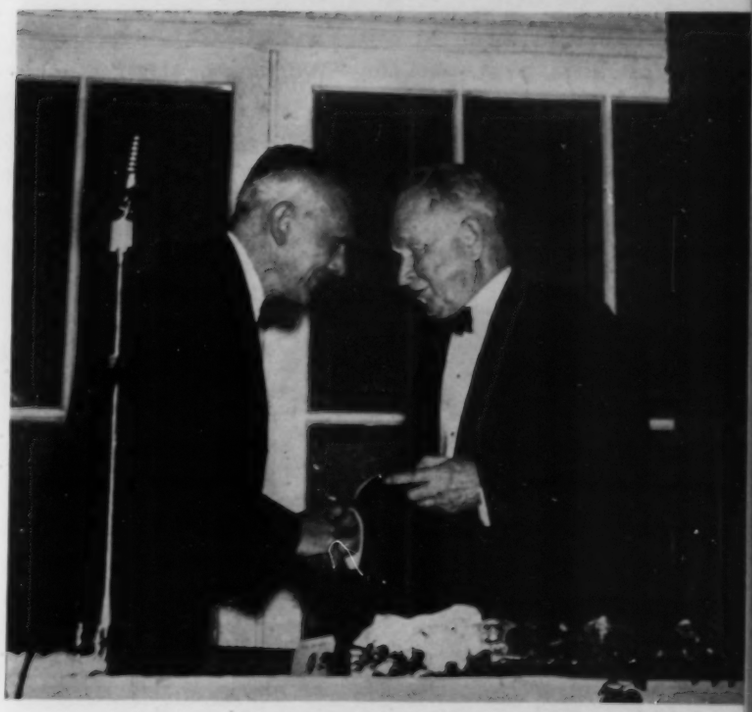
CONVENTION OF THE A.I.A.

Utility and beauty; "All this and Heaven, too." Douglas Haskell convincingly showed that differences between "science" and "art," or technology and design, exist largely in "our laggard minds"; proving that contemporary analytical methods are integrating and creative — and challenging the censor in the middle of the road as a "damnable obstruction."

(See the July issue of ARCHITECTURAL RECORD.)

And finally Carl Koch, with gloved knuckles, drove home the shortcomings of the A.I.A. from the point of view of the Young Practitioner.

That most constructive of program innovations — Pre-convention Seminars — was both popular and profitable. Its three discussion groups were informal, animated, and enthusiastically received. Both theory and practice in three fields were expounded and debated far into the night — on Urban Planning, Henry S. Churchill, chairman; on Hospitals, Marshall A. Shaffer, chairman; and on Schools, Franklin G. Scott, chairman. Thanks to the untiring efforts of Walter A. Taylor, Director of Education and Research, these seminars have set a precedent for future conventions.



Eliel Saarinen receives the gold medal of the American Institute of Architects and the congratulations of President Edmunds

Hon. George W. Welsh, Mayor of Grand Rapids, answers Robert E. Alexander as Ladislas Segoe, left, awaits his turn

Paul Gerhardt, Jr., stands by while Bransom Van Leer Gamber listens attentively to Louis Justement's persuasive argument

Above: Mayor Welsh and Mrs. Saarinen enjoy the pointed repartee of Medalist Eliel Saarinen

Below: At the President's Reception, Roger Allen protests photographer Welch's shot, as Mrs. Edmunds eggs him on

Below: Noel E. Thompson enlarges on the virtues of Spokane to Kenneth K. Stowell and Walter A. Taylor

Below: Edgar I. Williams, Edmund R. Purves and Ralph Walker discuss esthetics, or something; Samuel E. Lunden in back

Secretary Alexander C. Robinson, III, left, and Executive Director Edward C. Kemper, right

And speaking of pre-convention sessions, few realize the time, effort, thought and plain hard work on the part of the Board of Directors in preparing their Report. Thanks to the focus of the Directors' Report, opinion was quickly crystallized, delegates' discussion more sharply pointed, and decisions reached. So now for some of the actions taken: — The A.I.A. —

Voted to support the T.E.W. Bill (revised W.E.T. Bill) with some reservations; approving the Board's recommendations which in turn were based on the findings of the Institute's Urban Planning Committee.

Resolved to keep architects advised of progress under the Hospital Survey and Construction Act (Public Law 725), to cooperate in administering the program, to have an architect on all State Hospital Advisory Councils, to encourage educational programs on hospital design.

Resolved not to have a "Register of Architects qualified for Federal Public Works" but to develop a "Roster" of all members with necessary biographical and other factual data.

Resolved to "favor the complete elimination — with the exception of rentals on existing housing — of all remaining federal controls on building with respect to housing. . . ."

Went on record as opposing "monopolistic practices on the part of capital or labor" . . . and as opposing "the principle of the closed shop in the construction industry."

Approved a new two-part A.I.A. Document relating to Standards of Professional Practice.

Omnipresent amateur cameraman, architect, city and community planner, merchandising consultant, and Chairman of the Grand Rapids Convention Entertainment Committee, Kenneth C. Welch, who took these candid camera shots

THE ATTITUDE OF THE YOUNG PRACTITIONER

Delivered at the A.I.A. Convention, Grand Rapids, April 30, 1947

By Carl Koch

I WISH to thank the American Institute of Architects first of all for providing me with this opportunity of speaking to you. By inviting non-members here, the Institute has indicated a willingness to be criticized, so I will presume to the limit on your good nature.

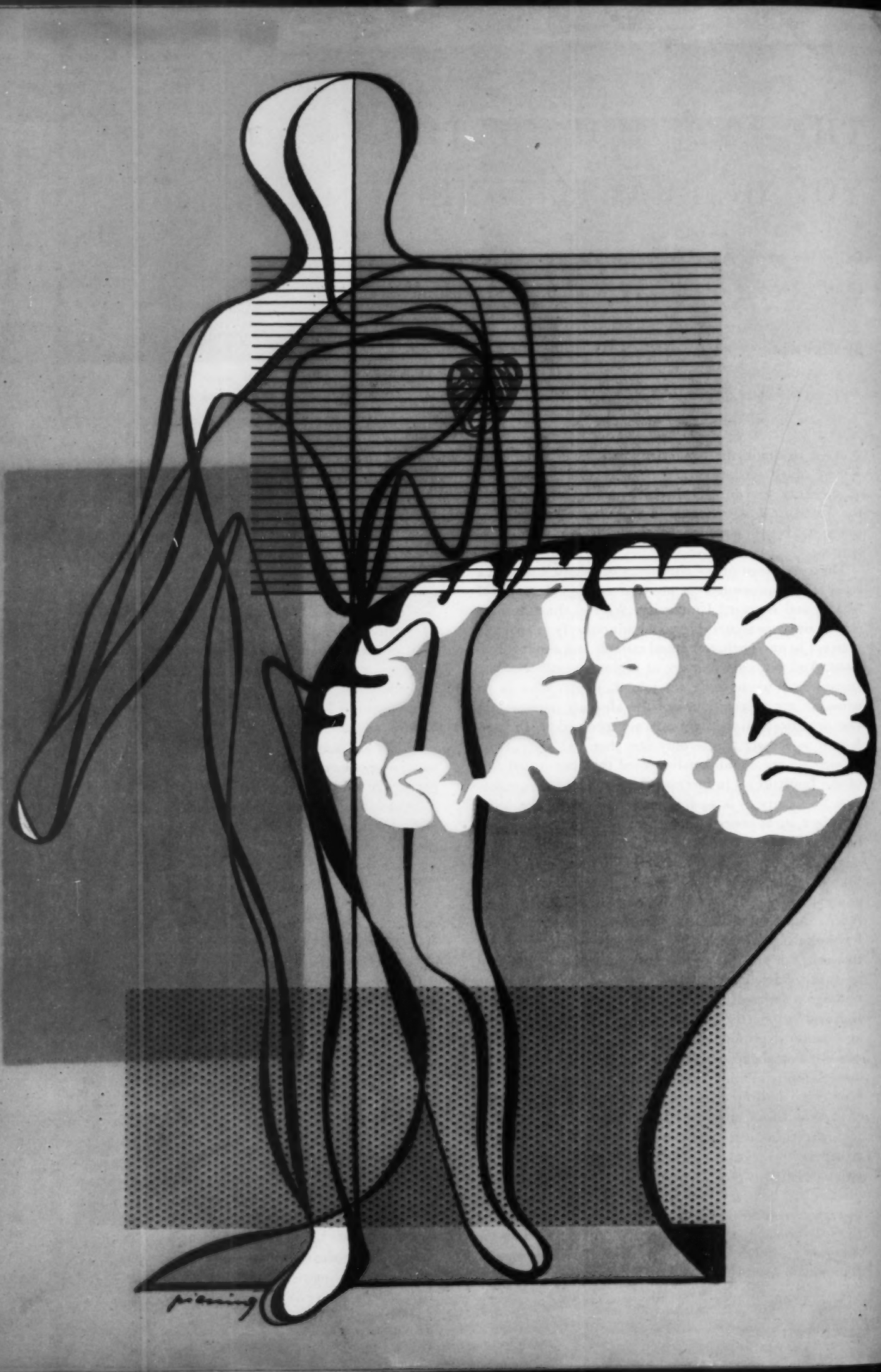
The two dozen other philistines of whom I am in a sense the representative, are the combined staffs of M.I.T. and Harvard University. We feel that the best way to improve something you don't entirely approve of is to get in and push, not stand outside and shout directions. And yet, only four are at present members of the Institute. Why haven't we joined, then? Why is it, when we are all convinced of the absolute necessity of one organization to represent our profession, that so few of us belong to the only one there is? Why, even though we are unanimously agreed that the stated aim of the Institute — to increase the service of the profession to society — is in full accordance with our own? The fact is, of course, that there is a tremendous gap between the principles on which the Institute was originally founded and their present practical realization. To date, many of us have found more room to be of service, limited though it be, outside the fabric of the A.I.A. than within it. This is not to say that we don't feel intensely the need of a real vehicle through which to work, nor that we would not welcome the Institute as that vehicle, but we feel that the Institute must undergo a series of major changes both in its organization and in its attitude before it can truly represent the architectural profession as a whole. We would like to make a few suggestions as to what we think must be done, bearing in mind that we have little right to do so. I am given additional courage to do this from the knowledge that these views are shared by a great number within the Institute who have been striving long and patiently to make these repairs and hence have a far greater right to speak than have we.

This gap between principles and practice can be illustrated I think by one case — the Institute's attitude toward housing and community planning. This is America's number one problem today. To whom should the country be able to turn for a solution? The architect. And where is the architect in the person of his representative, the Institute? He is out in left field, or I should say right field. When the Wagner-Ellender-Taft Bill was first hammered out — and little legislation has ever had more lengthy consideration — the following national organizations were predominantly behind it: NHA, U. S. Conference of Mayors, National Association of Housing Officials, National League of Women Voters, A.F. of L., C.I.O., most Veterans organizations, to mention a few.

These organizations were predominantly opposed to it: American Bankers' Association, Producers' Council, National Retail Lumber Dealers Association, National Association of Real Estate Boards, American Institute of Architects.

This I say advisedly as a result of talking to those people who have been struggling for a long time for passage of this bill, who insist that the Institute's attitude toward the bill, no matter what modified approval of some aspects of it some individuals or committee members may have voiced, has been on the whole a negative one. It is even possible that the various statements made by the Institute at this time have added up to approval of the latest version of the bill. The fact remains, however, that if the bill is passed the Institute will have contributed little or nothing to it, and certainly has contributed little in the way of positive, constructive alternative proposals. Wilson Wyatt, who fought valiantly to solve our housing problem, has stated that "the Institute was not very cooperative or helpful." He has further stated (and we agree), that he thinks the Institute will make a great mistake if it does not become actively and sympathetically interested in so-called "industrialized housing." . . . The industrialized house has got to come, whatever our personal feelings about it may be. It is up to us to have a constructive attitude toward it. There are grave dangers, and many pitfalls which this type of housing can bring in its wake, but instead of griping about it, and futilely attempting to put obstacles in its way, we should, as a few architects have done, recognize the challenge and make of it an opportunity to perform a real service to society.

(*Continued on page 162*)



HOSPITALS

ARCHITECTURAL RECORD'S BUILDING TYPES STUDY NO. 126

HOSPITALS ARE FOR HUMANS

DEAN Joseph Hudnut, at the Ann Arbor Hospital Conference, told one of his little parables about a visit to a new hospital. Depressed by its dismal aspect, he inquired about its architect, and was told, "this hospital is so functional, was planned by so many experts, that we had no need for an architect."

Even an architect, faced with the complexities of hospital design, and with its unresolved debates, has a natural tendency to concentrate on technical matters, to forget that hospitals, like houses, are for humans. Indeed, for humans under abnormal stress.

There are seemingly endless discussions of medical techniques, of nurses' steps, of doctors' convenience, of economy in everything from laundry to medical records. There doesn't seem to be much concern with the patient's comfort, or with an environment conducive to cheerful convalescence.

At the Ann Arbor meeting, one strong voice was raised in a plea for more privacy for the patient; specifically, for a greater proportion of private rooms. The speaker was Dr. Basil C. MacLean, director of Strong Memorial Hospital, Rochester, N. Y.:

"Years ago we were accustomed to the barracks type, with from 30 to 40 patients in one large ward. Then, as hospitals became institutions more for cure than care, their facilities were availed of by rich and poor alike. A few single rooms were added in most hospitals for those who could pay. Then came the renaissance and a miraculous advance was made from the pen to the stable, in that we devised some 25 years ago that hybrid, bastard type of accommodation, which is known as 'semi-private.' One could dwell upon the word 'semi-private' as one might upon such words as 'semi-chaste' and 'demi-virgin.'

"I realize that the philosophy underlying a stratification of patients is more economic than social, but submit that the operating cost of a floor of single small units is not greater than that of so-called 'semi-private' beds. There is an increase in cost of construction, but since patient areas usually are only 20 to 25 per cent of the total area in a hospital, the additional cost is comparatively small. I ask for the single unit on the basis of esthetics, patient comfort, and also from the standpoint of epidemiology. It has been shown that in military hospitals and barracks there is a correlation between upper respiratory illnesses and the number of men in the enclosed space. . . . Even in the modern penitentiary the inmate has a cell and toilet to himself. Let us hope that in time hospitals will offer accommodations which in privacy would equal that of a third rate hotel."

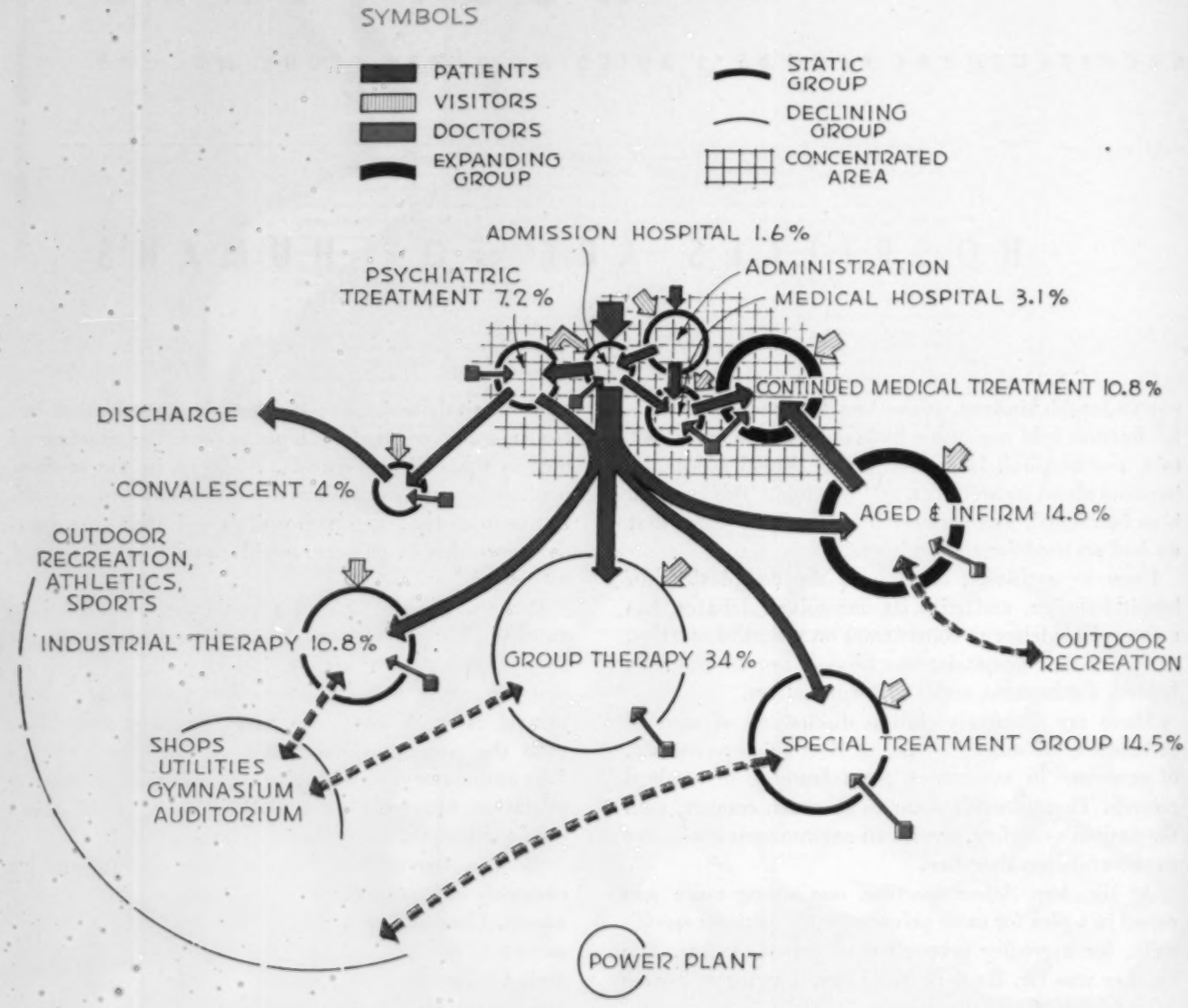
Perhaps the doctor's plea could be extended into another idea: the patient wants privacy, but only for the first few days of his hospital stay. Why not move him, after the worst is over, into something "semi-private"? Or at least into something less forbidding than the usual hospital room? And, as he becomes fully ambulatory, why not finally a sort of hotel accommodation, where his spirits can be raised, and his boredom ameliorated, by a club-like atmosphere?

As a matter of fact, this idea meshes right into a currently serious problem — the shortage of really good nurses. Concentrate seriously ill patients in a limited section of the hospital, with the best nurses. Move the ambulatory cases to some section less blessed with nursing talent. Finally they might get along with little more than maid service. Moreover, it has been pointed out that, due to regulations of hospitalization insurance programs, there is need for hotel accommodations for those who must become in-patients to take advantage of coverage for purely diagnostic services.

The theme of humanization of the hospital is discernible through this Building Types Study. It is seen most strongly in three features: (1) the study of the planning of a mental hospital, by Owen A. Luckenbach, for better care of the mentally ill is opening a whole new consideration of this type of hospital, in a building program that is bound to become important; (2) the presentation of Fort Hamilton Veteran's Hospital, done by Skidmore, Owings & Merrill, this being one of the early postwar hospitals in the $770,000,000 building program of the Veterans Administration, in which will be incorporated the new medical and psychiatric therapy techniques developed in the war; and (3) the plan suggestions for mental facilities in the general hospital; by the U. S. Public Health Service, the basic idea of which is the beginning of mental therapy in the general hospital, rather than in the awesome "asylum."

Drawing by M. Peter Piening

DIAGRAM OF PATIENT TYPES AND TRAFFIC FOR NORTHVILLE STATE HOSPITAL



PART OF CLINICAL HOSPITAL

ADMINISTRATION
Business Administration
Accounting
Superintendent's Office
Personnel Office
Steward's Office

PATIENT ADMINISTRATION
Social Service
Out-patient
Psychology
Auditorium
Student Nurses
Library
Employees' Cafeteria and Kitchen

ADMISSION SECTION 1.6 per cent.
All admissions for up to 10-dgy observation period

PSYCHIATRIC TREATMENT SECTION 7.2 per cent.
Patients for whom intensive treatment is indicated

ACUTE MEDICAL SECTION 3.1 per cent.
Patients requiring intensive medical treatment or surgery

CONTINUED MEDICAL TREATMENT SECTION 10.8 per cent.
Patients requiring continued medical treatment over a prolonged period

HYDROTHERAPY DEPARTMENT

SEPARATE BUILDINGS

AGED AND INFIRM BUILDINGS 14.8 per cent.
Four 1-story buildings for ambulant, semi-ambulant, and bed patients requiring extra nursing but little or no medical care

SPECIAL TREATMENT GROUP BUILDINGS 14.5 per cent.
Four 1-story buildings for chronic deteriorated and disturbed patients. To have well-screened recreation areas adjacent to buildings

GROUP THERAPY BUILDING 3 per cent.
Six 2-story buildings for the chronic psychotics who constitute the largest group of custodial patients. Buildings to be located near the recreational and occupational facilities

INDUSTRIAL THERAPY BUILDING 10.8 per cent.
Four 2-story buildings for the best adjusted patients. Located near garden, laundry, shops, etc.

CONVALESCENT BUILDINGS 4 per cent.
Four 2-story buildings for patients before discharge. Homelike arrangement and environment

INDUSTRIAL BUILDING
Furniture repair, shoe repair, mattress making, sewing, etc.

OCCUPATIONAL THERAPY BUILDING
Handicraft, drawing, weaving, hobbies, etc.

RECREATIONAL THERAPY BUILDING
Auditorium, gymnasium, swimming pool, billiards, table tennis, bowling, etc.

CHURCH OR CHAPEL
For religious services only and shall be satisfactory for use by all denominations

SERVICE BUILDING
Patient and employee cafeterias, store bakery, kitchens, refrigerator

LAUNDRY

STORAGE BUILDING

MAINTENANCE SHOP AND GARAGE

POWER PLANTS

NURSES' AND AFFILIATES' DORMITORY BUILDING

DOCTORS' APARTMENT BUILDING

EMPLOYEES' APARTMENT BUILDING

12 HOUSES FOR SUPERINTENDENT, STEWARD, CLINICAL DIRECTOR, DEPARTMENTAL HEADS AND DOCTORS

PLANNING THE MENTAL HOSPITAL

By Owen A. Luckenbach

Basic research necessary to the planning of Northville State Hospital, Michigan—O'Dell, Hewlett & Luckenbach, Architects—makes a major contribution to the literature of planning

WHEN we undertook the planning of Northville State Hospital, a mental institution originally projected at 3500 beds, it was soon realized that we faced one of those basic research assignments that seem to be forever broadening the practice of architecture. While, figuratively at least, our T-squares were gathering dust, we had to start back at the definition stage, and gradually develop a concept of what a modern mental hospital is, how it classifies and treats patients, in order to arrive at some visualization of its building requirements.

The RECORD has asked me to recount at some length the various steps in the Northville research. I can certainly testify to the need for some architectural literature on the mental hospital (we found virtually none), and can emphasize the difficulties that the architect will face in a planning activity which should have an interesting future. For in spite of the need for modern mental hospital facilities, there is as yet no clear formulation of requirements which the architect can accept. He must lead, for there is virtually nothing he may follow.

There were found drastic differences of opinion as to how mental hospitals should be run. There were considerable differences of opinion as to how many and into what groups the different patients should be classified. Different institutions, not only in Michigan but throughout the country, had grown up without definite long-range plans. They had been constantly enlarged, all the time trying to do the job of taking care of these patients with inadequate attendants, personnel and money.

Where to start was quite a problem in itself. Fortunately for us and the State of Michigan the Department of Buildings and Construction is headed by Adrian N. Langius, an architect who is very familiar with the mental health problem and the Michigan institutions over a period of many years. He is also a Technical Advisor to the Committee on Hospitals for the U. S. Surgeon General's Office. It was his own research and thinking which enabled us to start work on our problem without unnecessary false moves and preliminary surveys. If we wanted specific information on any points, he invariably could tell us where to get it, if it were at all available. Without his support and architectural viewpoint the problem would have been immeasurably more difficult.

It was finally decided that we should have to confine ourselves to the complete analyses of the Michigan institutions and a few of the more advanced researches in the field of neuro-psychiatry.

Toward this end four of the Michigan State Hospitals were visited and through conferences the thoughts and ideas of how a mental institution should be planned and run were obtained, as determined by the experience and background of the superintendents and personnel. From this information the charts herewith were prepared, which show the breakdowns into different proportions and classes of patients, the hospital and service facilities necessary, and which suggest the functioning of those facilities.

These charts showed both surprising similarities and equally surprising differences. Note that in general the breakdown and proportion of patients on the Michigan charts is fairly consistent. On the other hand, the administration section varies widely. Also the location of the doctors' offices varies considerably. One superintendent favors a highly centralized doctor group, and the other complete decentralization.

In order not to be governed too much by only Michigan thought, the paper by Dr. Hamilton, Mental Health Adviser to the United States Public Health Service, was analyzed, and a chart was prepared showing the same functions as on the other charts. You will notice that this chart, contrary to all of the Michigan thought, completely decentralizes everything.

One of the difficulties run into at this stage was the utter lack of uniformity in terminology for different types of patients. What one doctor thinks of as and calls a "receiving hospital" is entirely different from another doctor's concept of it, and in actual practice the function of types of buildings that are similar in name is entirely different.

As background, we used the recommendations and standards of the American Psychiatric Institute. However, practically everybody agreed that a breakdown of patients, as far as the Institute recommended, was actually an administrative rather than a building problem. Different types of patients are housed in the various groups of buildings; and while a further break-

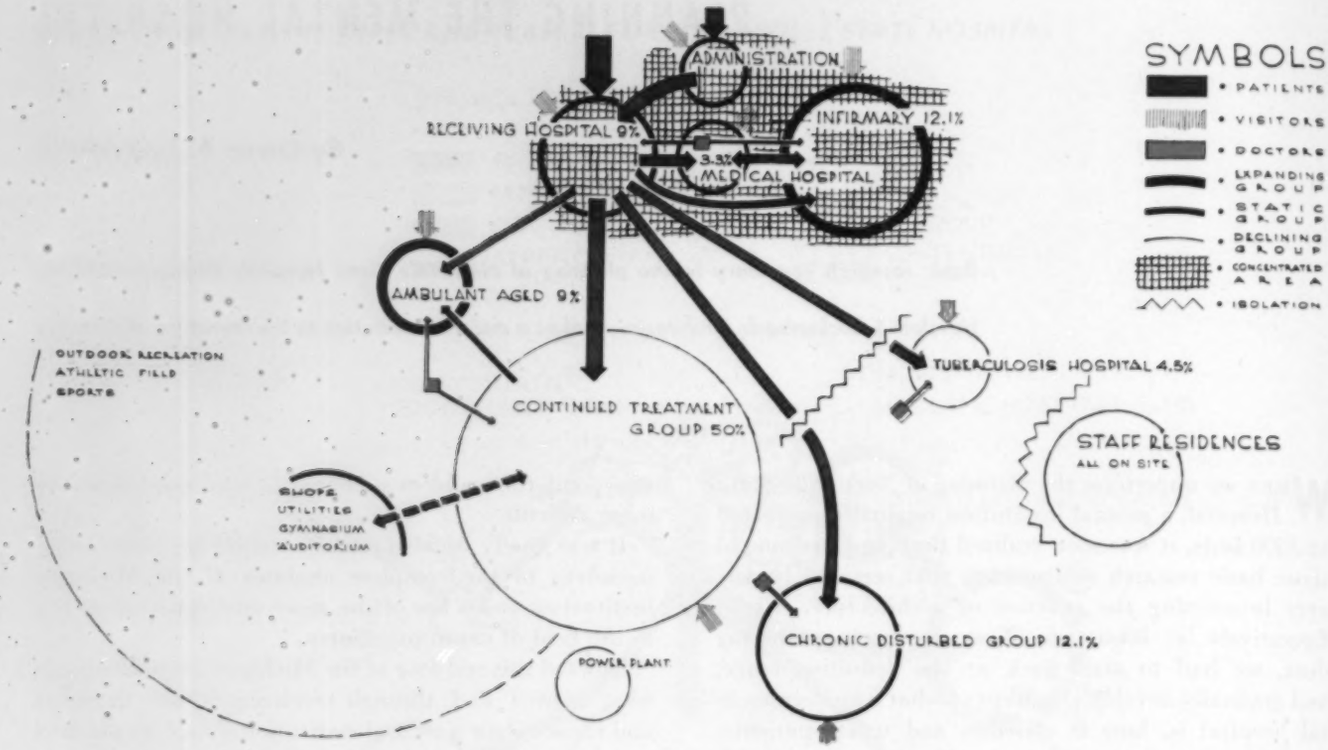


DIAGRAM OF PATIENT TYPES AND TRAFFIC FOR HOSPITAL FOR MENTALLY ILL

Compiled from Medical Superintendents' charts

down of types should be made, it would not and could not be reflected in planning.

At this point it might be mentioned that as the various states evolved their care of mental patients they set up certain patterns and habits which vary considerably. As far as possible, consistent with good planning, the local habits have been continued, where these habits did not interfere with the care of patients.

After all the material on what we call the basic planning had been gathered, tabulated and analyzed, the decision as to which way or how Northville would go was still to be made. These decisions actually should be and were made by the Department of Mental Health. Mr. Charles F. Wagg, the Deputy Director (who was with us and in fact guided the research), in conjunction with Dr. Charles A. Zeller decided the basic scheme or basic plan for Northville.

Briefly, as the chart shows, it was decided to have a concentration, in one main unit, of administrative facilities, medical facilities (both acute and continuing treatments), medical patients, training and research, the small admission hospital and an intensive psychiatric treatment hospital — all to work as nearly as possible together. The doctors are decentralized: that is, their offices will be in the patient areas where they work.

This plan will put 770 patients in the central area, of whom only the acute medical and continuing medical treatment patients are housed in multi-story structures. All other patients throughout the whole institution are to be housed in one- or two-story structures. To have all these patients on the ground floor would be ideal. The Infirmary group will all be housed in one-story units. The Group Therapy and Industrial Therapy units, which on the Michigan charts are classed as "continued treatment," are composed of the best-adjusted people, and it seems logical that here one-half the patients could be housed up one flight of stairs. The Special Treatment group, called on the charts "Disturbed," which consists of disturbed and deteriorated patients, will be housed in one-story structures. The Convalescent group, who are those patients closest to discharge, will be housed in small groups with as homelike an atmosphere as possible; they are so well-adjusted that they can easily be housed in two-story structures. This arrangement puts 2097 patients on the first floor, 1057 on the second floor, and 386 in the multi-story unit.

Having broken the patient load into groups and determined the number in each group, the problem remained of how to house them. The number to put in each building had to be decided. The adjunct facilities had to be determined. How many doctors should be in each group? The desirability of mass feeding in huge cafeterias versus dining rooms, large dining rooms against

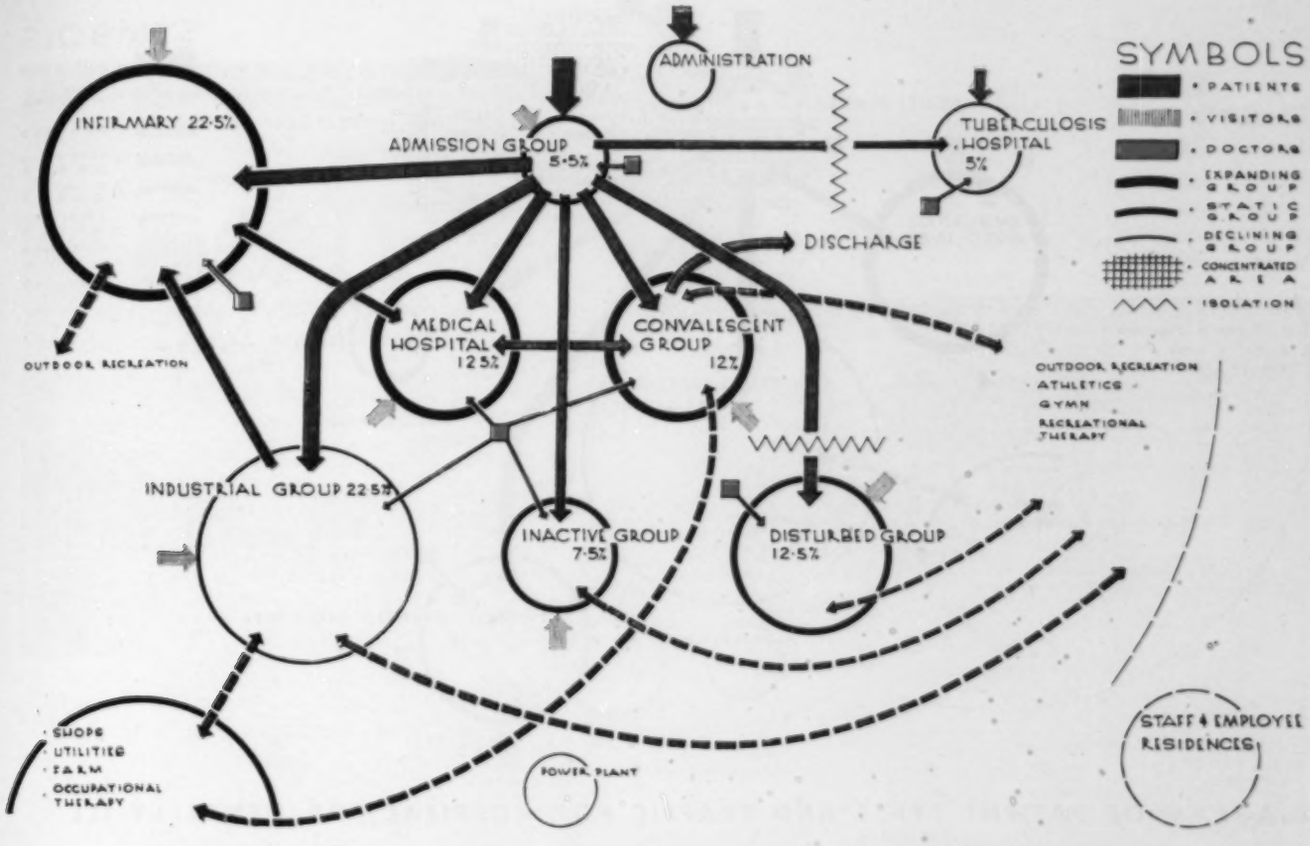


DIAGRAM OF PATIENT TYPES AND TRAFFIC FOR HOSPITAL FOR MENTALLY ILL

Based on an article by Dr. Samuel W. Hamilton, Mental Health Advisor, U. S. Public Health Service

small dining rooms, all had to be balanced as to necessary therapeutic considerations against feeding cost. How much in the way of hydrotherapy facilities shall we provide, and where? Recreational facilities and occupational therapy facilities dispersed through the institution or centralized? All facilities had to be balanced among therapeutic and cost and operational considerations.

In these questions we ran into a vast diversity of opinion. Available statistics on cures and discharges were of no help at all. The doctor who favored mass handling of patients in large wards and dining rooms and three-story institutional structures could show a cure or discharge rate on a par with an institution with an opposite set-up. Nowhere are there to our knowledge any standards to go by. The existing institutions are mainly useful (except in a few specific and isolated rooms or facilities) only as examples of "how not to do it." One doctor can maintain that the environment has absolutely nothing to do with the curing or even the early discharge of patients, and statistics will neither confirm nor deny it. This does not mean to say that he considers environment unimportant; it only proves that statistics on this type of thing mean nothing.

Another of the early planning problems was the relation of the different parts to each other, especially in centralizing the main group. The fact that we have so many facilities with definite relations and the difficulty with which they went together seem to indicate that a hospital this size is approaching or has approached the maximum for good functioning.

From the charts the following groups for the Northville Hospital were set up:

1. Admission	60 patients	1.5%
2. Psychiatric treatment	250 patients	7.0%
3. Acute medical treatment	100 patients	3.0%
4. Continuing med. treatment	350 patients	10.0%
5. Infirmary	520 patients	14.6%
6. Special treatment	520 patients	14.6%
7. Group therapy	1200 patients	34.2%
8. Industrial therapy	380 patients	10.8%
9. Convalescent patients	150 patients	4.3%
Totals	3540 patients	100.0%

At the present time there is under consideration adding a section of 40 to 50 beds to the continuing medical treatment for a tuberculosis section. The original thought as far as Northville was concerned was that all tuberculosis patients would be cared for at another state hospital in the metropolitan area. There is, however, some feeling that Northville should have a small section which would act as a diagnostic

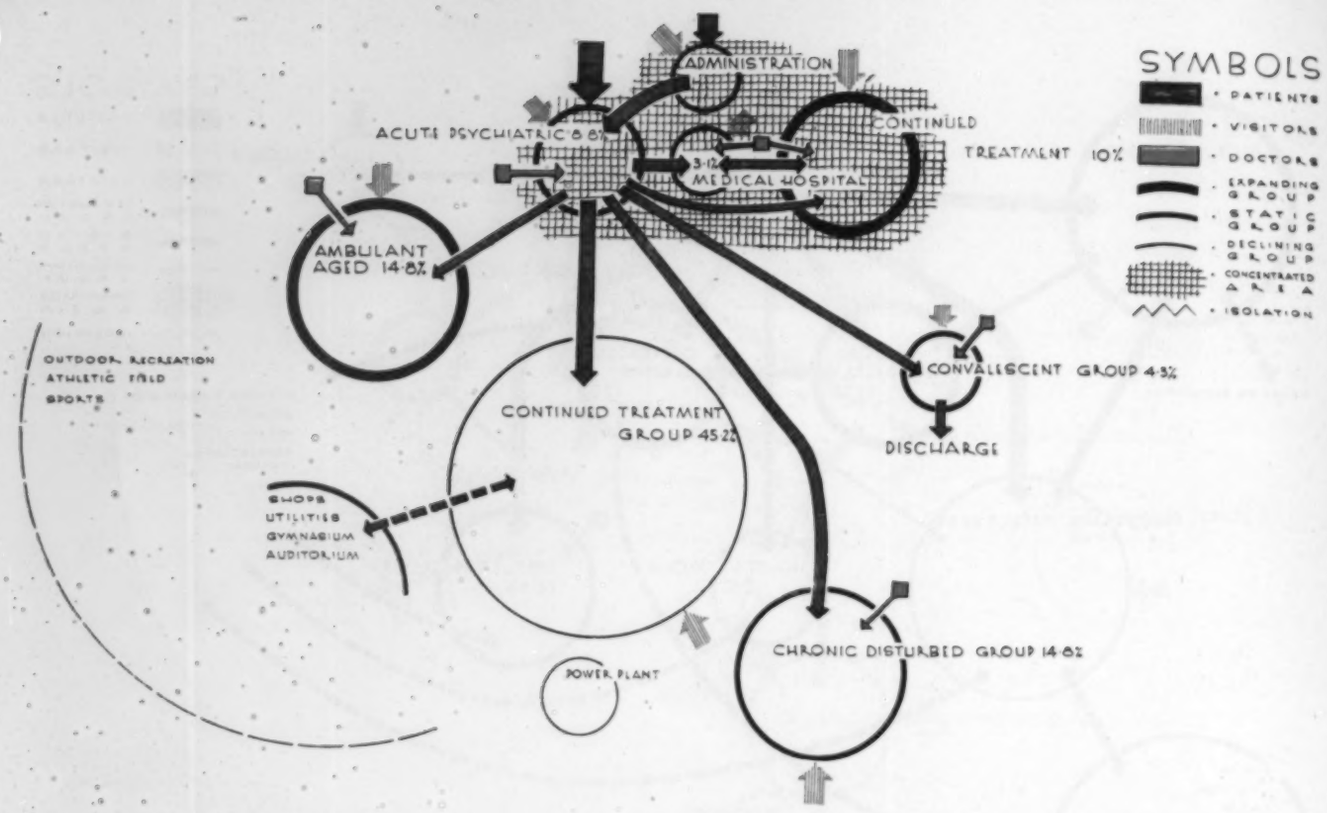


DIAGRAM OF PATIENT TYPES AND TRAFFIC FOR HOSPITAL FOR MENTALLY ILL

As suggested by Dr. R. A. Morter, Medical Superintendent, Kalamazoo State Hospital

ward for short-term care for those patients who are tubercular on admittance or become tubercular while in the institution. It is felt in order to warrant having a tuberculosis specialist on the staff a minimum size of 40 to 50 beds should be provided.

PATIENT ADMINISTRATION FACILITIES

According to the American Psychiatric Association there should be a minimum of one physician for every 200 resident patients plus one physician for each 100 annual admissions. With 3500 patients and an admission rate of 800-1200 per year, the staff should have, then, from 25-39 doctors, as well as a medical director and three or four dentists. We shall provide for approximately 50 doctors, a medical director and three dentists. These doctors, with the exception of the medical director and six departmental heads whose offices will be in the patient administration, will have their offices in each patient section of the hospital where they will work. The exact number and facilities in each section will be determined in consultation with the superintendents of existing institutions.

The medical stenographers and medical files will be in the patient administration section.

Social service workers, who must have access to medical files, should be adjacent to those records and near both the admittance section and the public lobby.

There will also be teaching facilities and a psychological section. The teaching area will need classrooms and an auditorium, which logically should also be used for staff meetings, psycho-dramatics and radio facilities.

Most important of patient administration are the nurses and attendants; they contact patients more than does any other group, including physicians. In any institution the quality of their work is directly reflected in its standards. Moreover, as it is becoming more and more difficult to employ adequate help, the physical facilities for these people should be the best. Throughout, nursing and attendants' stations and utilities will be planned so as to minimize their work, which is hard and sometimes very unpleasant. Adequate lounges and other spaces should be provided.

The director of nursing and her assistants' offices are placed throughout the patient groups, to provide direct and adequate supervision. The assistant in charge of teaching has her office near the classrooms; one assistant is to be near the Admittance and two assistant supervisors in the Psychiatric Treatment sections, and the director of nursing will be in the medical section; others, with each special grouping. There will be an on-site student nurses' housing facility.

BUSINESS ADMINISTRATION

Adjacent to, but not directly a part of, the patient administration section, will be the business administration. In a hospital of 3500 patients the superintendent cannot possibly do much, if any, actual medical or psychiatric work. He is, of necessity, an administrator; his office should not be in the medical department, but in business administration. Near him will be his

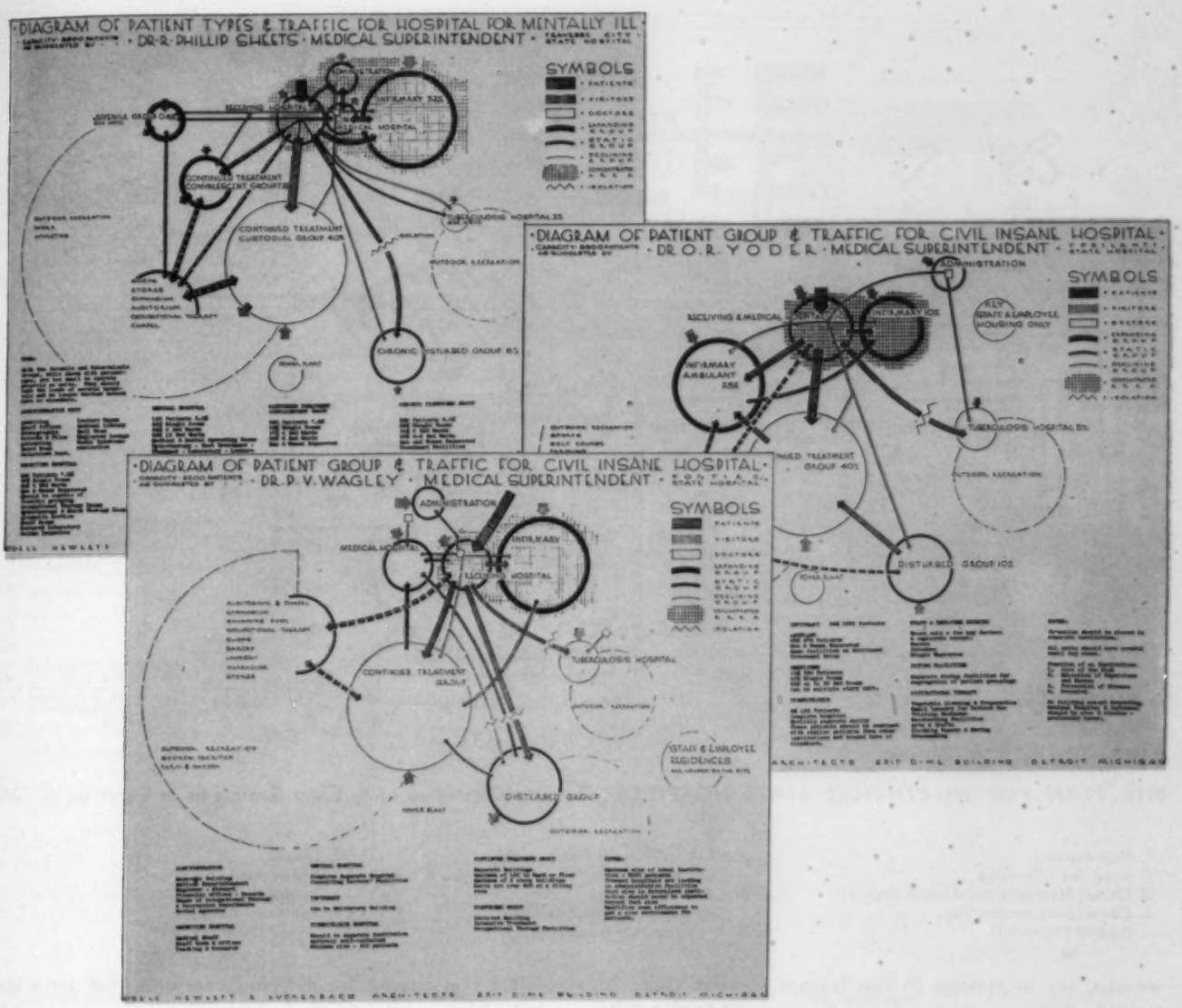


DIAGRAM OF PATIENT TYPES & TRAFFIC FOR HOSPITAL FOR MENTALLY ILL
DR. R. PHILLIP SHEETS · MEDICAL SUPERINTENDENT
SYMBOLS
DIAGRAM OF PATIENT GROUP & TRAFFIC FOR CIVIL INSANE HOSPITAL
DR. O. R. YODER · MEDICAL SUPERINTENDENT
SYMBOLS
DIAGRAM OF PATIENT GROUP & TRAFFIC FOR CIVIL INSANE HOSPITAL
DR. D. V. WAGLEY · MEDICAL SUPERINTENDENT
SYMBOLS

assistant, and the steward, with a large conference room for their joint uses. Here are the bookkeeping department and their active files. This section has direct access to the public.

MEDICAL FACILITIES

Adjacent to the acute medical patient section will be the adjunct medical facilities, with major and minor operating rooms, central sterilizing, dental facilities, X-ray rooms, therapy and treatment rooms. Provision will be made for a hydrotherapy department, as well as the hydrotherapy facilities needed in the different patient groups. There will also be the clinical laboratories for medical use, and in a separate wing the research laboratories and facilities.

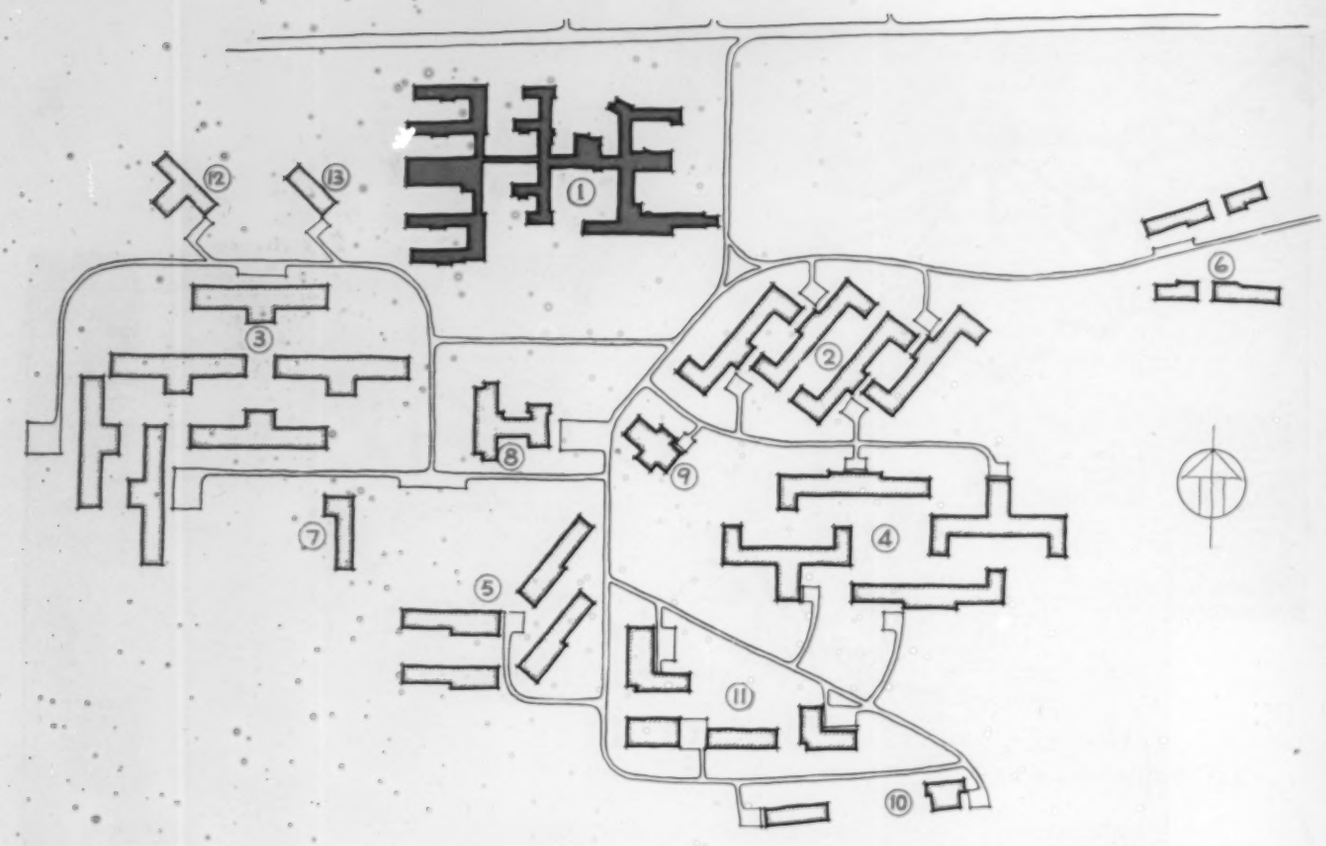
VISITORS' FACILITIES

Because of its location in the Detroit metropolitan area, Northville will have a very large number of visitors, and ample visiting room will be provided in each patient section.

ENVIRONMENT

The fact that Northville is a hospital cannot be overcome, but we believe that although it will have an institutional character it is possible to differentiate between a good and bad institutional character. We are striving to attain a pleasant and satisfying environment. Either through deliberate design or chance the vast majority of mental institutions are dark, drab and unpleasant places. They would definitely promote claustrophobia in someone who never had previous symptoms. The lobbies are usually dark, dingy, low-ceilinged rooms that shriek of confinement and detention. Many of them have barred windows, or at least small psychiatric sash which would give even a normal person a desire to break a window and get out.

It is a common agreement with all in charge of Northville that we will have no such feeling and no such windows. All, or nearly all windows, will be so installed that psychiatric screens can be used. These screens are fine-mesh stainless steel, like insect



SITE PLAN FOR NORTHVILLE STATE HOSPITAL, Showing Disposition of Building Groups as in Chart on p. 106.

1. Main Building
2. Aged and Infirm Unit
3. Chronic Psychiatric Unit (Group Therapy)
4. Chronic Deteriorated Unit (Special Treatment)
5. Working Patients' Unit (Industrial Therapy)
6. Convalescent Unit
7. Occupational Therapy Building
8. Recreational Therapy Building
9. Chapel
10. Power House
11. Service Unit
12. Apartment Building
13. Nurses' Dormitory

screens, set in springs in the frames so that there is enough give to make it practically impossible to break out. Contrary to popular opinion the barred windows and sash are designed, not primarily to keep the patients from breaking out and running away, but to prevent them from self-destruction.

Practically all our rooms in the Medical, both Acute and Continuing, face south. Throughout the rest of the hospital, consistent with our planning, we have kept the patients' rooms south, east or west. These rooms are primarily used at night and orientation is not nearly so important as in the case of bedridden patients.

The other considerations are walls easy to maintain, with no sharp corners. Hinges should be concealed, and in most cases doors should be wide enough for stretchers and beds to move through easily.

We think of a liberal use of glass both inside and outside the structure; Tuflex or other safety glass will definitely be considered.

Practically all toilet and bathing facilities are special.

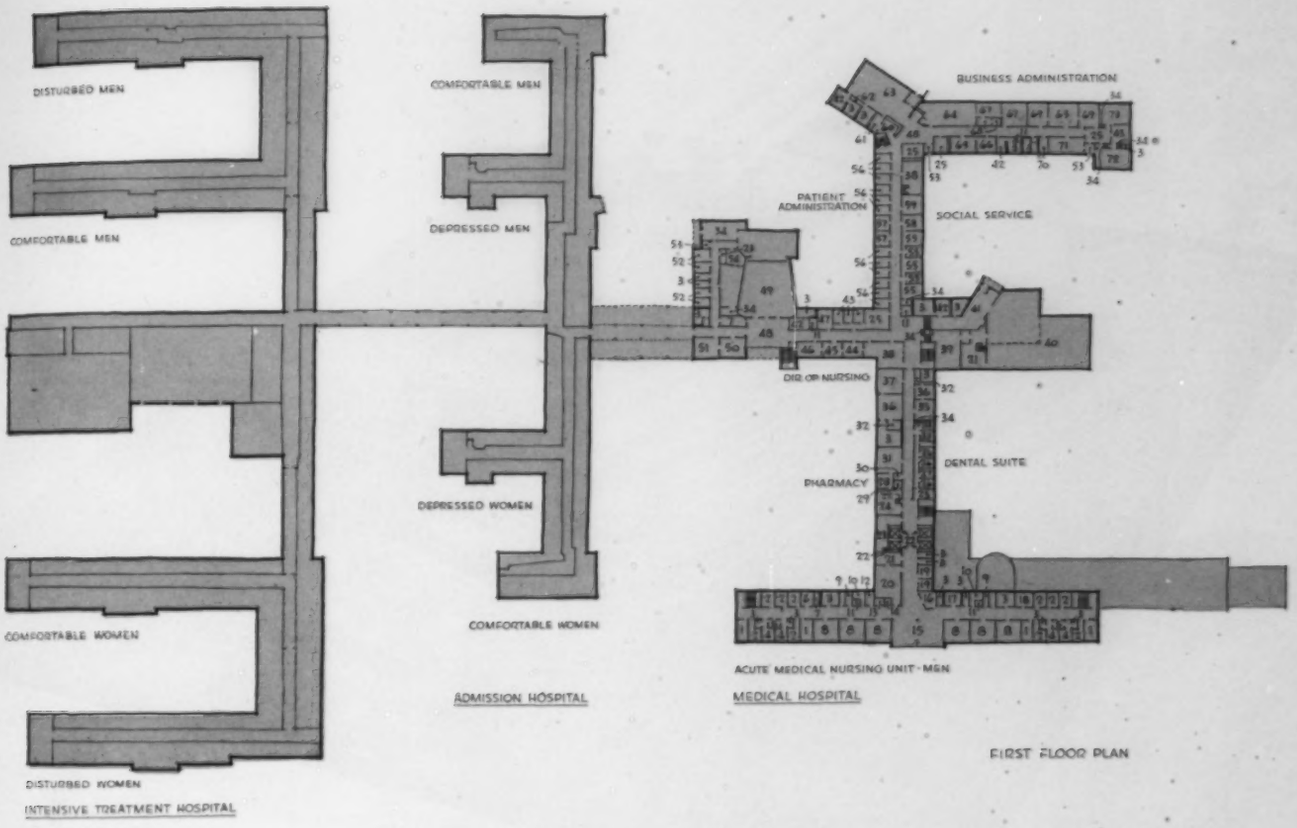
THERAPY FACILITIES

Throughout the hospital there will be facilities for occupational, recreational, industrial, agricultural and all other therapies in addition to a special Recreational Building and an Occupational Therapy Building. There will be a chapel for religious services for patients.

Another special facility which consumes considerable space is the hydrotherapy department. Here are the pack beds, which are definitely specialized psychiatric treatment. The continuous-flow tubs are also here, but are again also scattered throughout the various patient buildings on the site according to the type and condition of the patients.

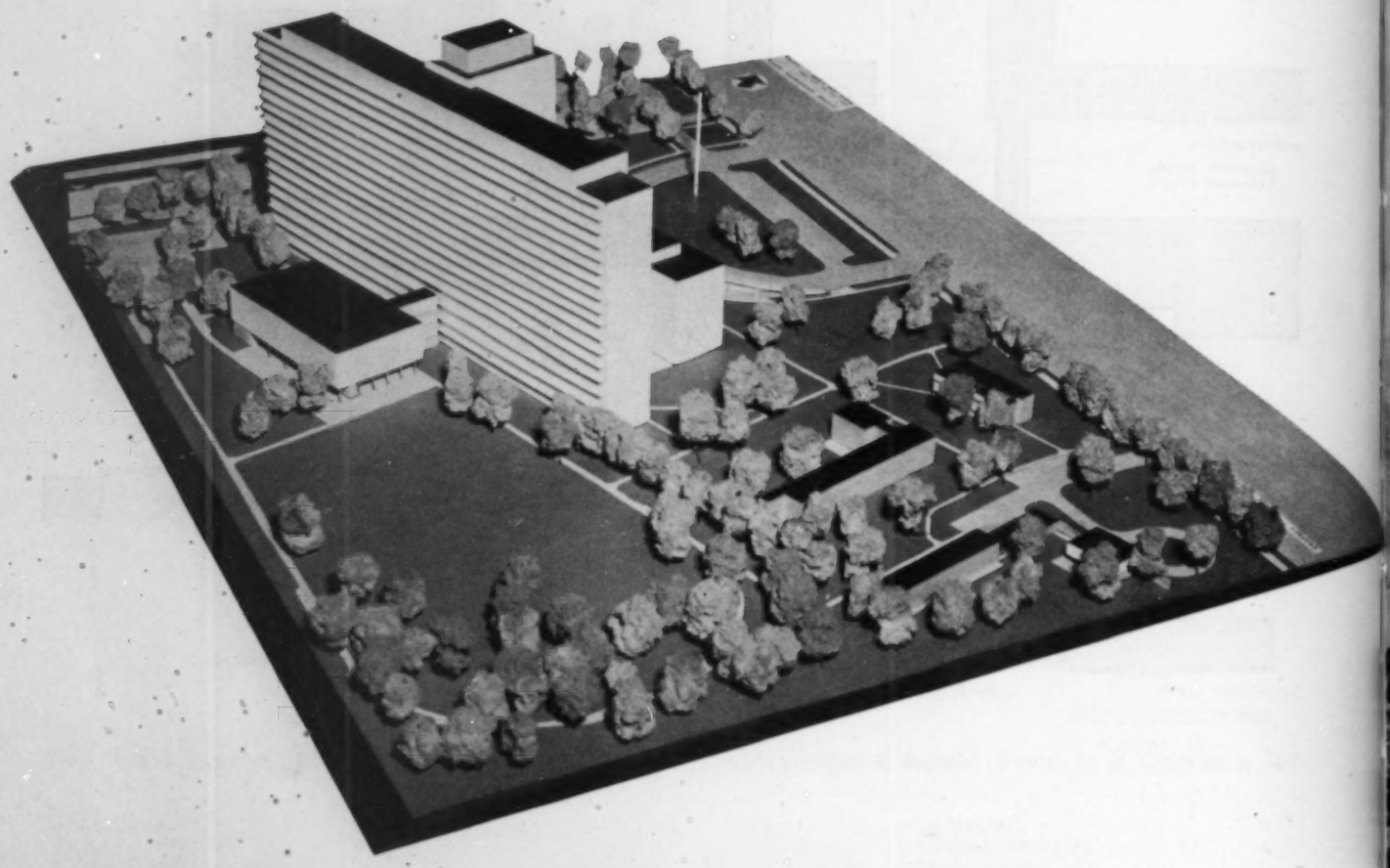
We have made no special provision for the mass handling of insulin shots. Such treatment will be and should be carried on in the medical hospital, and private rooms and four-bed wards will be used for this therapy. It has been the intention as far as possible to confine all special treatment, whether medical or psychiatric, to the main unit. Patients from the other part of the hospital go into the special psychiatric section or medical section for treatment, much as the average person goes to the hospital or a clinic for his treatment rather than being cared for at home.

Within the limits possible the intention here has been to try to think of each group of patients as comprising an individual convalescent hospital, where within the larger frame all facilities and advantages accruing to a large institution can be had, with the advantages of smaller groups actively administered to by their own doctors, nurses and attendants.



LEGEND

1. Double Rooms
2. Single Rooms
3. Toilets
4. Isolation Rooms
5. Sub-Utility
6. Treatment
7. Clothing
8. 4-Bed Rooms
9. Bedpan Sterilizing
10. Linen
11. Janitor
12. Occupational Therapy Storage
13. Wheel Chair Storage
14. Stretcher Storage
15. Day Room
16. Nurses' Station
17. Utility
18. Bath
19. Visiting Rooms
20. Patients' Dining
21. Serving
22. Elevator, Dumbwaiter, Lift
23. Equipment
24. Prescription Pharmacy
25. Waiting
26. Dental Technicians
27. Dental Lab
28. Solution
29. Bottle Storage
30. Sterilizer
31. Manufacturing Pharmacy
32. Shower
33. Dental Operating
34. Storage
35. Nurses' Lounge
36. Lockers
37. Women Attendants' Lounge
38. Stenographic and Files
39. Staff Dining
40. Employees' Cafeteria
41. Employees' Entrance
42. Rest Room
43. Out-patient Interview
44. Asst. Director of Nursing
45. Secretary
46. Director of Nursing
47. Out-patient Office
48. Lobby
49. Auditorium
50. X-ray
51. Identification and Immunization
52. Dressing Rooms
53. Entry
54. Radio Control
55. S. S. Student Workers
56. S. S. Workers
57. S. S. Clinic
58. S. S. Supervisor
59. S. S. Director
60. Information
61. Switchboard
62. Telephones
63. Main Entrance and Lobby
64. Accounting
65. Clerical
66. Personnel Officer
67. Accountant's Offices
68. Vault
69. Steward's Offices
70. Stationery
71. Conference
72. Superintendent
73. Asst. Superintendent



FORT HAMILTON VETERANS' HOSPITAL

BROOKLYN, NEW YORK

Col. W. S. Heavey, N. Y. District, Corps of Engineers, for the Veterans Administration; Skidmore, Owings & Merrill, Architect-Engineers

THIS 1000-bed general hospital, one of the first in the $770,000,000 program being built by the Corps of Engineers for the Veterans Administration, is also one of the first to illustrate new hospital standards that grew out of the war experience, standards applicable to all hospitals. While they did grow out of criteria of the Veterans Administration and the Corps of Engineers, it is the feeling of John O. Merrill, partner in charge of the project, that the standards set here are really general trends in hospital design, and will be reflected sooner or later in civilian hospitals. In short, this hospital represents a first opportunity to incorporate the new wartime therapy in a completely new hospital.

As for matters of design, the hospital also represents something of a *tour de force* in contemporary directness toward achieving smooth functioning, design simplicity and structural economy.

New hospital standards are recognizable first in the considerable array of facilities for treatment, both medical and psychiatric. Here are the sciences, and the arts, that will return a high percentage of this war's disabled to useful and self-respecting living. Besides the strictly technical advances, the recreational facilities here are notable, including such items as patients' library, with soundproof rooms for "talking book machines," and blind library, radio studio, and so on.

Also important in this respect is the neuropsychiatric, or "N.P.," section, of 200 beds. This too is significant, in

line with the new thought in civilian hospitals of a section for mental treatment, to begin such therapy in something less forbidding than an isolated mental institution.

THE SCHEME FOR FT. HAMILTON

In architectural matters, the arrangement of nursing units was arrived at and agreed upon almost instantly, according to Gordon Bunshaft, partner in charge of design. Partly it was an obvious dictate of the site conditions, and partly it was a logical outgrowth of the need for some separation of functions in a complex organism.

The site, of approximately 17 acres, is a detached part of the Ft. Hamilton Army Base at the southern end of Brooklyn facing The Narrows, which is the entrance to the Port of New York. The location provides an ocean view on the southern exposure, an ideal hospital situation. This fortunate coincidence occasioned the elongated main structure, taking full advantage of sun and view.

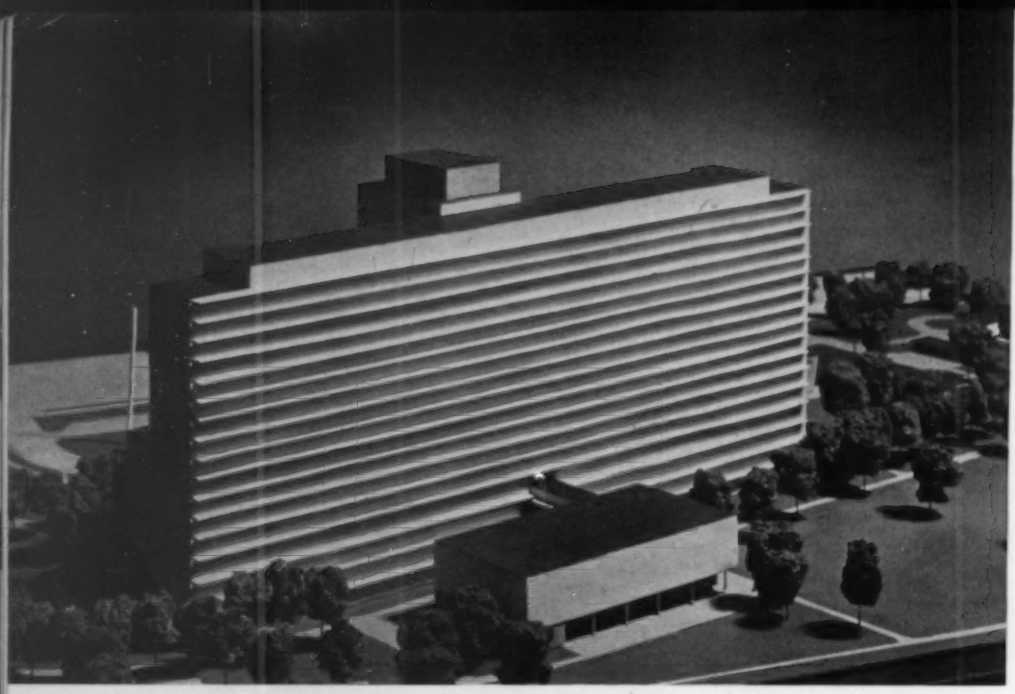
The scheme developed, with two nursing units of 40 beds each per floor (80 beds per floor), locates 95 per cent of the beds in rooms with southern exposure. On the north side are the various nursing and medical facilities, as well as the vertical circulation core.

The main hospital divides into three separate structures, plus a connecting core of elevators and service facilities. The large section is the hospital portion, of 17 stories. The base of the enormous T is a five-story building housing medical services and out-patient department. The third is a smaller offshoot of the main portion, housing cafeteria, auditorium and religious welfare facilities. The short riser of the T becomes a traffic center, and an effective traffic cop, keeping different kinds of traffic in their own lanes.

TRAFFIC CONTROL

The primary traffic control is inherent in the three-section scheme. Out-patient traffic stays in the five-story medical building, has no occasion to go further into the hospital. Separate elevators in this section keep out-patient traffic out of the main bank of elevators in the traffic center.

The two-level entrance keeps patient and visitor traffic separated — patients enter on the ground floor, visitors on the first floor, reached by the ramped en-



This mass-study model shows the auditorium wing (foreground) in more simple treatment than is indicated on the rendering, p. 115. The model is the later design, and the one that was finally chosen

trance drive. This separation is maintained for any concentrations of traffic inside. Patients, in their bathrobes probably, reach the auditorium at the ground level (same as patients' entrance). They go to the cafeteria on the second floor level. Visitors would be interested only in the religious spaces of the auditorium wing; these are at the first floor level (same as visitors' entrance). Incidentally, the chapel section is the only part of that building which would give occasion for mixing patient and visitor traffic.

STRUCTURAL SIMPLICITY

The separation of building sections by function also aided in reaching the objective of structural economy and simplicity.

There is not one single off-set column in the whole hospital. A completely symmetrical column system resulted in substantial economy, through standardization of steel design and erection. Incidentally, the division of the hospital into two main sections contributed to this task of simplification, for it permitted one logical module for the nursing unit wings and another module for the smaller building with its need for larger rooms.

CONSTRUCTION OUTLINE

Superstructure. Steel frame structure, class A fireproof in accordance with New York City Building Code. The 17-story structure is designed with double channel framing in the north-south direction to take care of wind bracing. This system provides excellent connections to columns and takes up a minimum of floor thickness. The floors are reinforced, ribbed, two-way concrete slabs. The ceilings are furred except in minor service areas. The sun canopies on the south elevation are of reinforced concrete. The roof is at dead level, waterproofed with built-up roofing.

Ramp. The ramp leading to the first floor entrance is built of reinforced concrete and supported by a single line of columns located at the ramp center line.

Windows. With some exceptions, all rooms are equipped with double-hung windows. The arrangement provides two openings and two fixed elements per bay. One of the exceptions is the window unit on the psychiatric floor, which is of the projecting type provided with interior security screens. The north elevation of the north wing features fixed windows of Thermopane glass for operating rooms, and casement windows with fixed and opening sash on the other floors; pivoted windows are used in the auditorium wing.

INTERIOR FINISHES

Walls. Extensive use of glazed wall materials is made in the main hospital building for sanitary and maintenance reasons. On the lower floors, the central elevator core is faced with porcelain enameled steel panels in crinkle finish. The operating rooms have structural glass walls. On psychiatric floors tempered glass is used for observation openings in partitions.

Floors. Corridors and wards have asphalt tile. Rubber tile is used in the neuropsychiatric units. Certain areas have special floor finishes like terrazzo in the main lobby, cork in lounges and recreational halls. The chapel has a bluestone floor.

Ceilings. Acoustic ceilings of the mineral type will be used in the following areas: solarium, corridors, recreation areas, offices, public lobbies, certain food service equipment rooms, and medical rehabilitation. Other ceilings are furred plaster, or plaster applied directly on ribbed concrete slabs.

MECHANICAL EQUIPMENT

A central power plant will generate steam for distribution to the various buildings, where it will be utilized for heating and ventilating, hot-water heating, sterilizing, food service and laundry equipment. An economical distribution has been assured by locating most of the vertical ducts and main pipes in the center core of the hospital building.

Heating. In general the buildings will be heated by means of radiators and convectors under the control of outside zone thermostats, but to meet special requirements, panel heating will be employed in several locations. For the psychiatric unit, ceiling panels were selected in order to preclude injury to patients which might result from heating elements installed in the room. At the same time, tampering with mechanical equipment will thus be prevented. Another heating problem arises from the fact that the chapel floor is exposed to the outdoors. This condition will be met by the installation of heating panels in the floor. A further application of panel heating is found in the passageways connecting the main building with the auditorium wing. These spaces are bounded on each side by glass walls and therefore are subject to extreme influence of climatic variations. For this reason, each passage will be served by a group of floor and ceiling panels.

Air Conditioning. Air conditioning will be provided for the operating suite, the recovery rooms, the allergy rooms, and the animal house, adjoining the clinical laboratories. Each operating room, anesthesia, and cystoscopy room will be equipped with individual temperature and humidity controllers. In addition, one of the operating rooms will be served by a secondary refrigerating cycle so that conditions of 60° dry bulb and 50 per cent relative humidity may be obtained when needed for special surgical work.

All air-conditioning systems as well as the ventilating systems serving the laboratories and the central supply unit will be equipped with electrostatic air filters. In addition the air supplied to several critical areas will first pass through batteries of germicidal lamps, resulting in a 98 per cent reduction of air-borne bacteria in a two-minute time interval.

Refrigeration. Walk-in refrigerators are provided in central stores, kitchens, garbage disposal units, etc. The morgue is equipped with a double-ended mortuary refrigerator. Small refrigerators are provided in various service and nourishment kitchens, utility rooms and laboratories.

A central chilled drinking water system is provided in the hospital building: two flake ice machines with 2000 lb. capacity per day and one ice-cube machine with 450 lb. capacity per day are provided to take care of the ice supply for the entire hospital.

Air Sterilization. Besides air sterilization in connection with the air conditioning system, germicidal lamps are provided in the isolation unit, libraries, and in operating rooms.

Signal System. The doctors' paging system is of the flashing light type. Nurses call system is a light and buzzer system. A special alarm system is provided in the neuropsychiatric units.

Radio. A four-channel system is provided with outlets at every bedside, equipped with plug-in listening devices and selector.

Telephone. Interior and exterior telephone systems are provided in accordance with general standards. Special telephone booths are provided in all nursing units for wheelchair patients. All nursing units are equipped with "telecarts."

Gottscho-Schleisner Photos

Pneumatic Tube System. A 4-in. tube system connects the medical record room with all nursing units, treatment sections, as well as with all offices concerned with records.

Elevators. The center core serving the 17-story south wing is equipped with five standard hospital-size public elevators and four service elevators, two of which are of normal size and the other two are designed 7 ft. wide to facilitate the handling of food carts. The north wing is equipped with one public and one service elevator. Other elevators installed are one food elevator connecting food receiving, subsistence and refrigeration with the kitchens located in the first and second floors; two mortuary elevators, one in connection with the morgue and the other one in connection with the chapel.

Dumbwaiters. Dumbwaiter service is provided (three units) for conveying special diets and other food items from the main kitchen to the nursing units. Another two-dumbwaiter unit will handle sterile supplies and drugs.

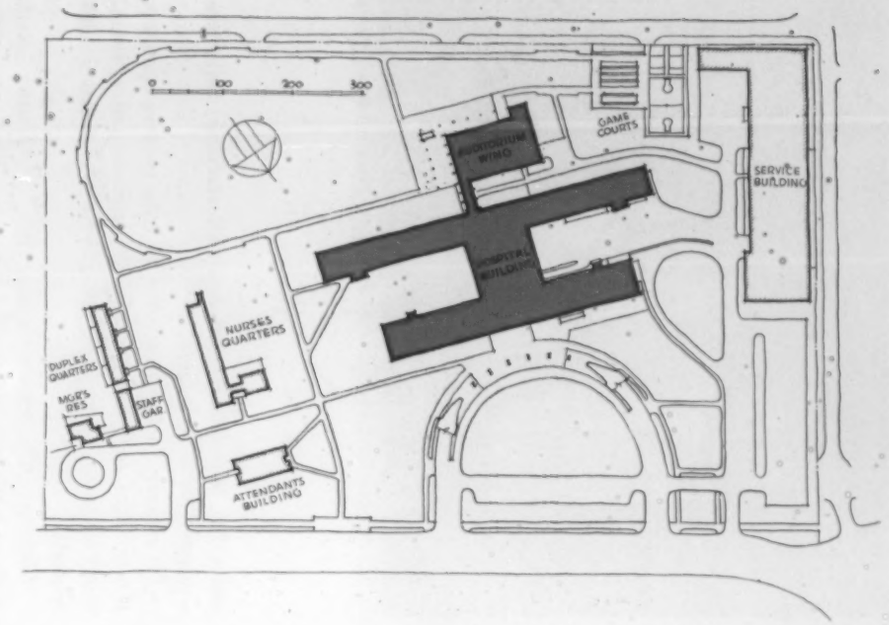
LIGHTING

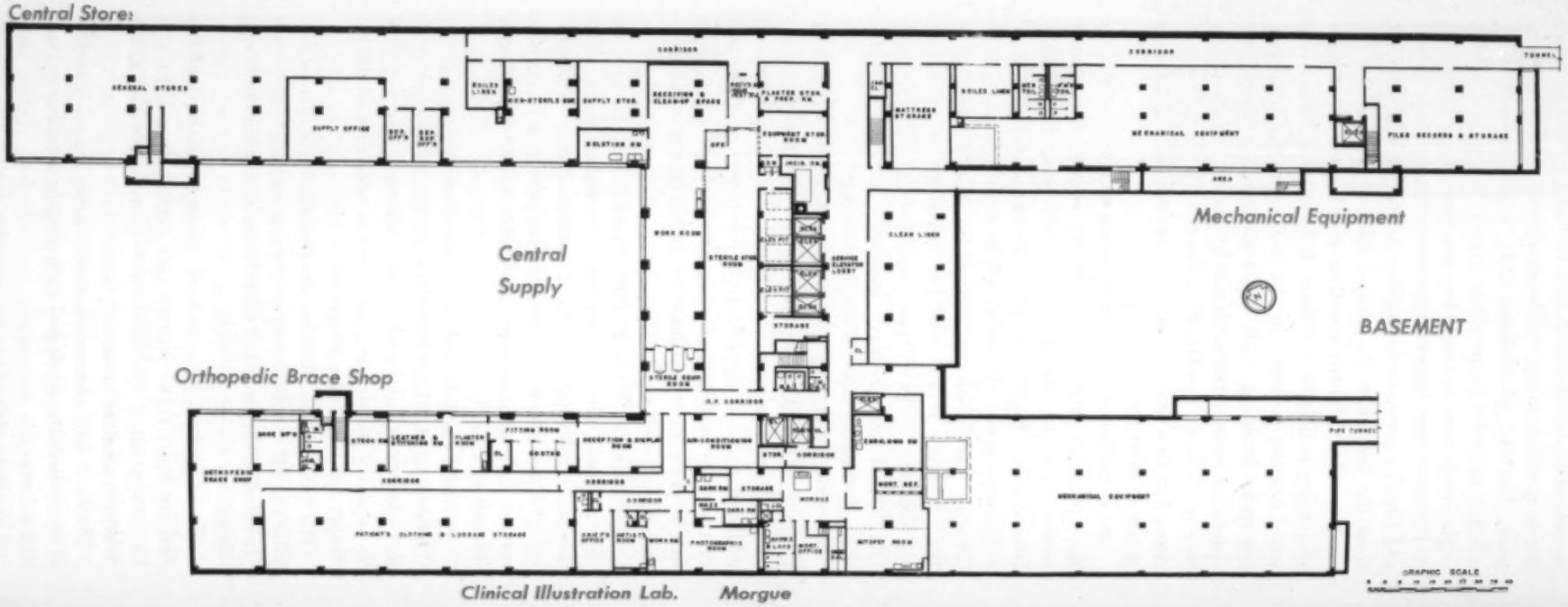
Natural. Precise studies had been made for the design of the sun canopy of the south elevation of the main hospital structure. Height above windows and projection of canopy were carefully determined in such manner as to protect the glass areas from the sun, but at the same time to permit full sun penetration in the winter season.

Artificial. The criteria in general call for incandescent lighting except in areas where more than 15 foot-candles are considered as standard. Nevertheless, the use of a double function fluorescent lighting fixture in the patients' rooms was considered. An experimental room with true dimensions was erected featuring various types of overhead wall type fluorescent fixtures providing direct and indirect lighting; however, incandescent lighting was finally adopted for the patients' rooms.

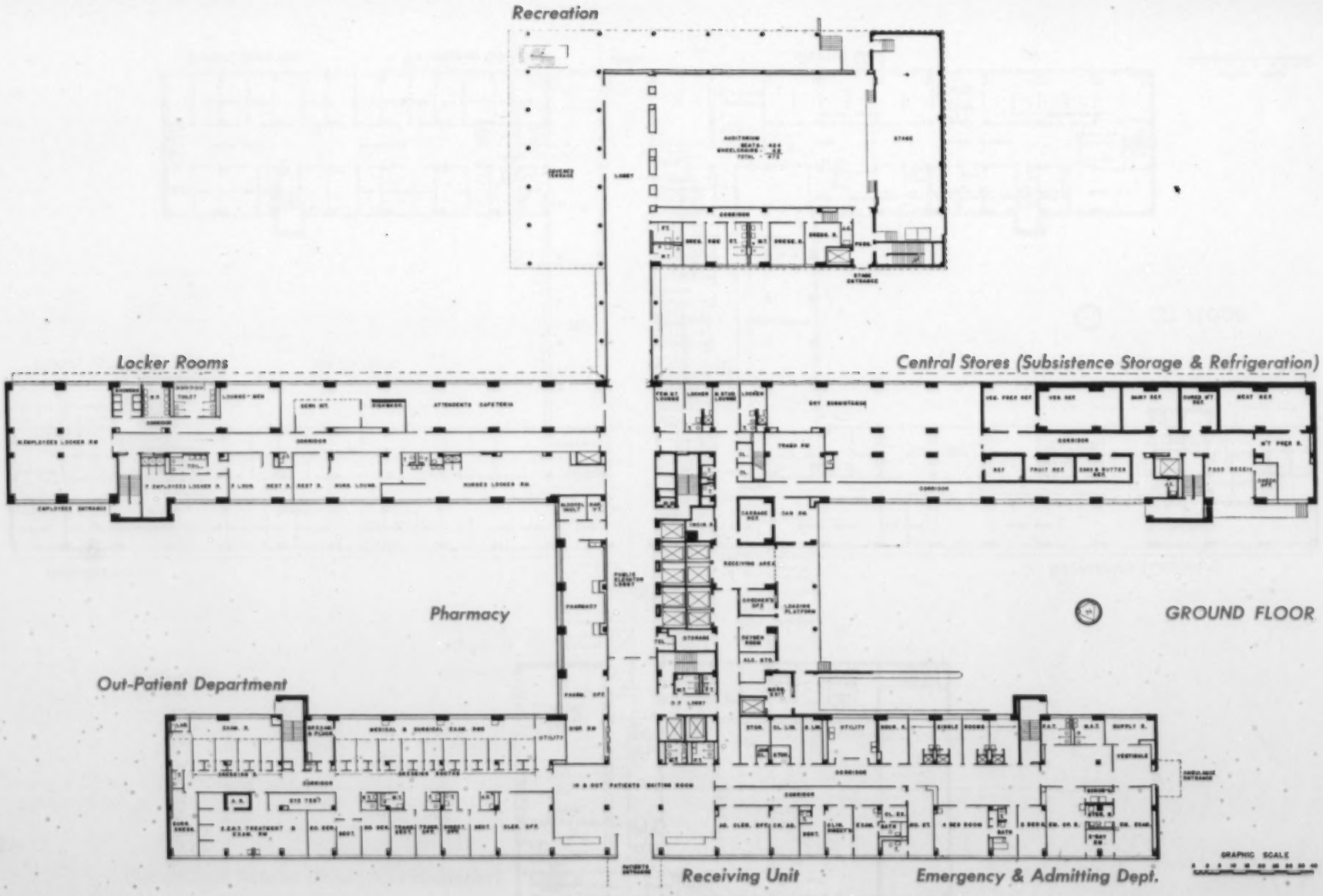
FORT HAMILTON HOSPITAL PLANS

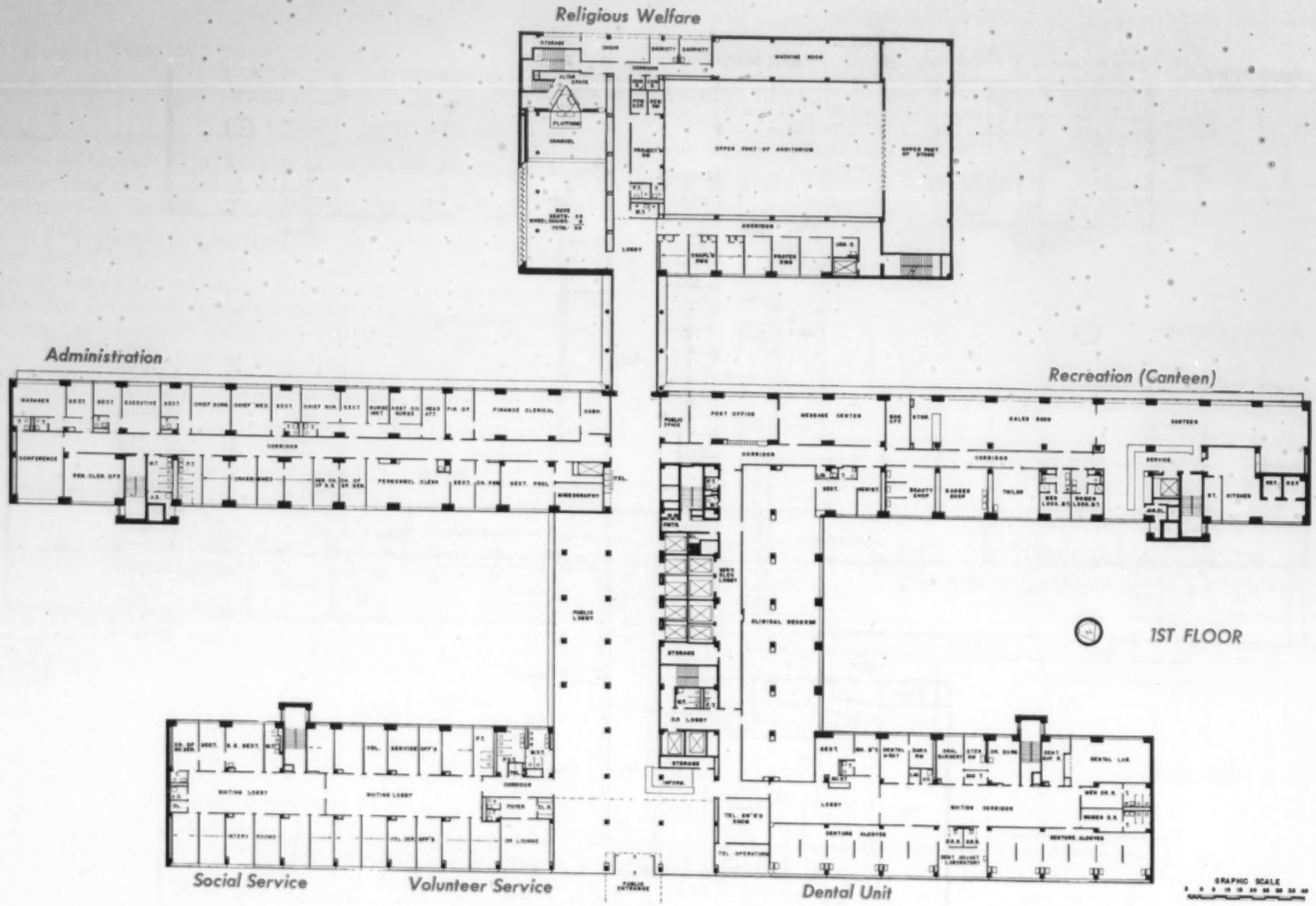
The main hospital is composed of three connecting structures: (1) south wing and center core, 17 stories and basement, (2) north wing, five stories and basement and penthouse, (3) auditorium wing, three stories and basement. The two main entrances — the patients' entrance on the ground floor and the public entrance on first floor, are accessible by ramps designed for one-way automobile traffic. This feature separates traffic for interior circulation. A further segregation of in- and out-patients is maintained through the provision of separate vertical transportation, out-patients having their own elevators in the north wing. The patients' cafeteria is located on the second floor, in order to provide a view of the ocean which at this level is unobstructed. This location also keeps most patient traffic away from the lower floors, these being generally reserved for the public and for administration

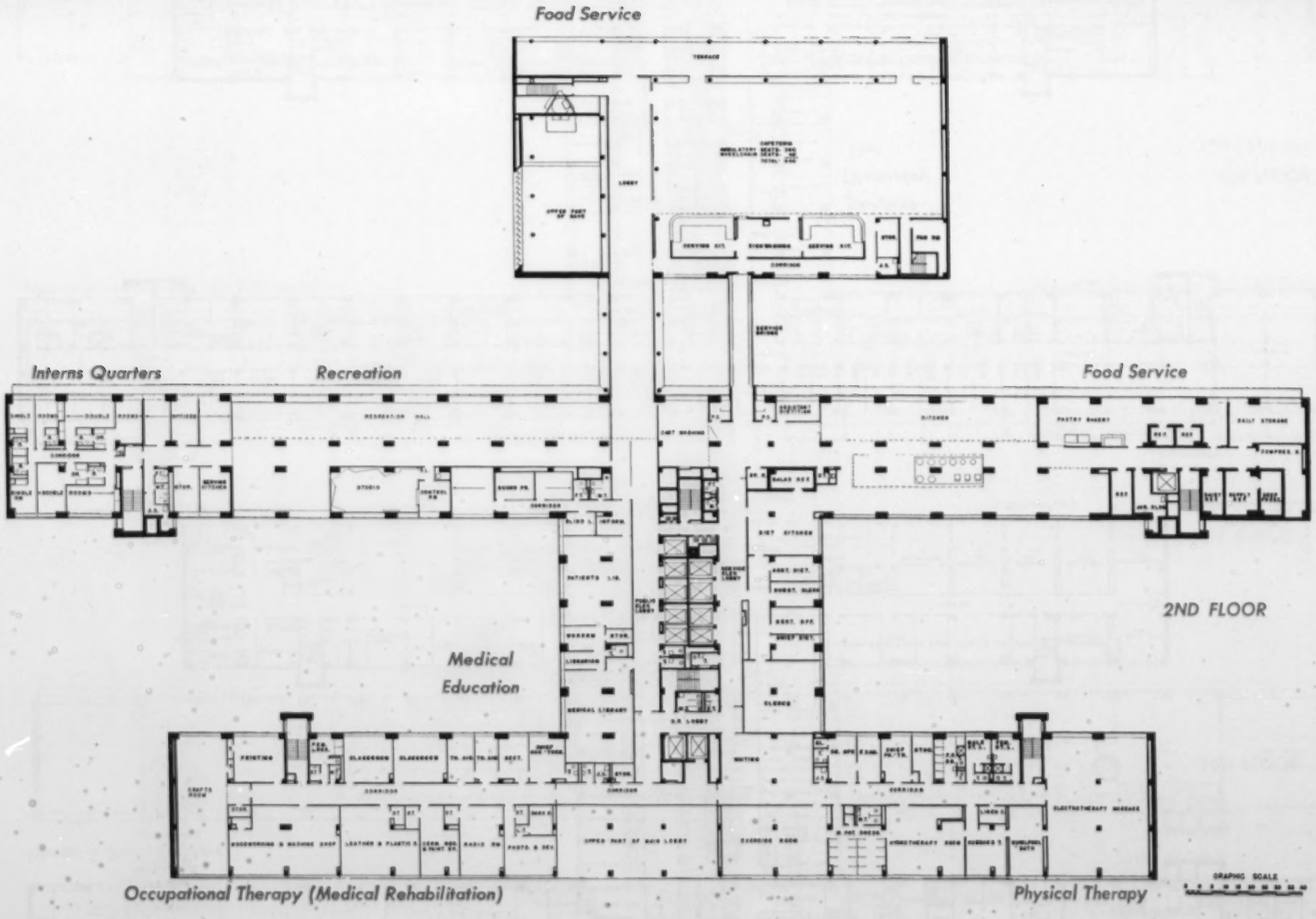


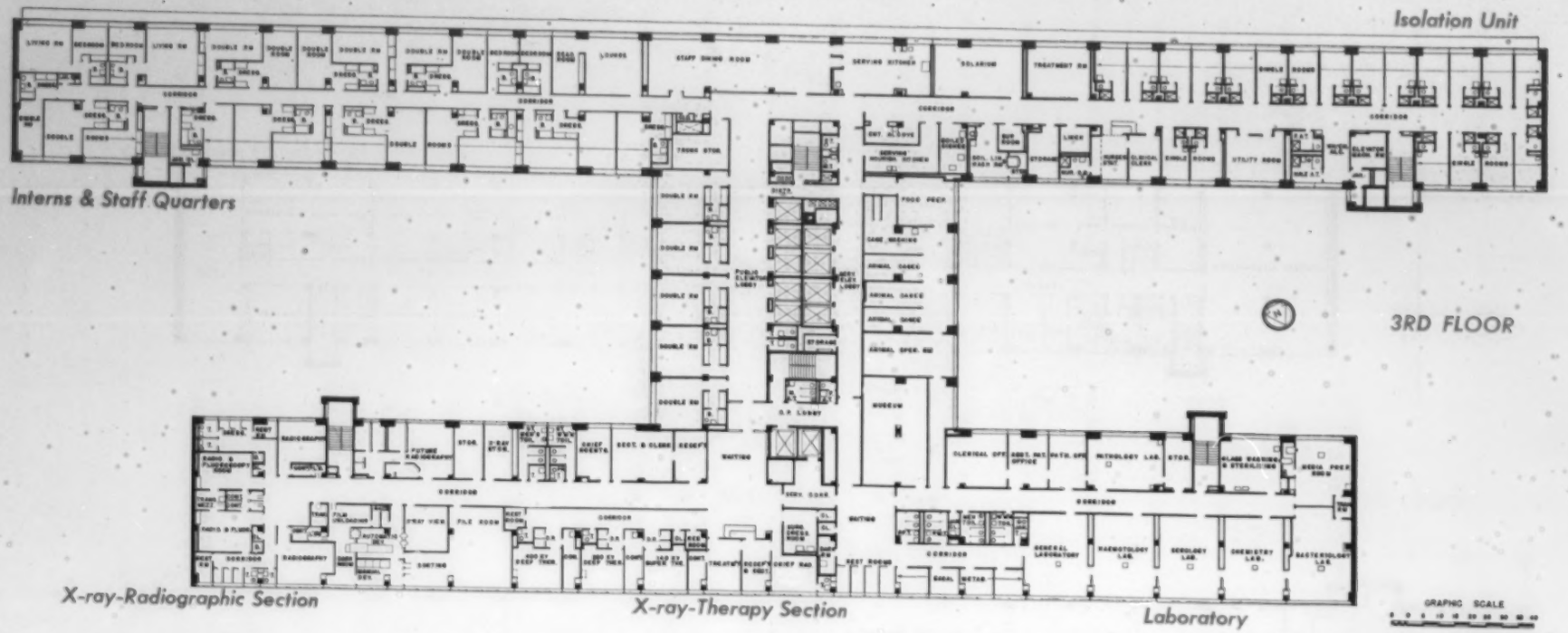


Clinical Illustration Lab. Morgue




Religious Welfare
Administration
Recreation (Canteen)
1ST FLOOR
Social Service
Volunteer Service
Dental Unit
GRAPHIC SCALE


Food Service
Interns Quarters
Recreation
Food Service
2ND FLOOR
Medical
Education
Occupational Therapy (Medical Rehabilitation)
Physical Therapy



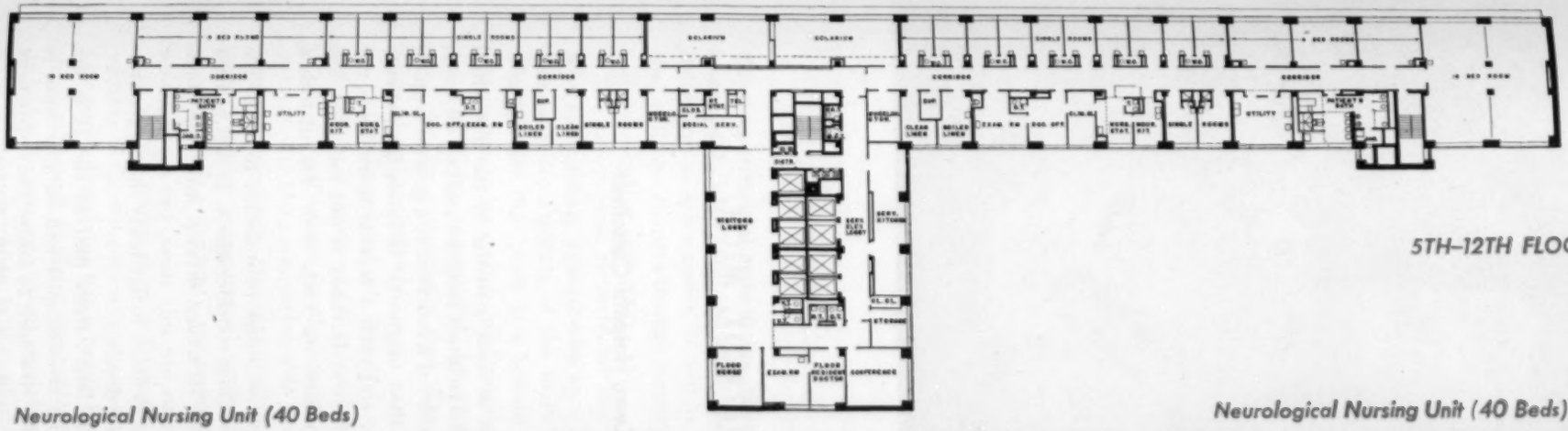
Typical Nursing Unit (40 Beds)

Typical Nursing Unit (40 Beds)

Operating Suite

Typical Nursing Unit (40 Beds)

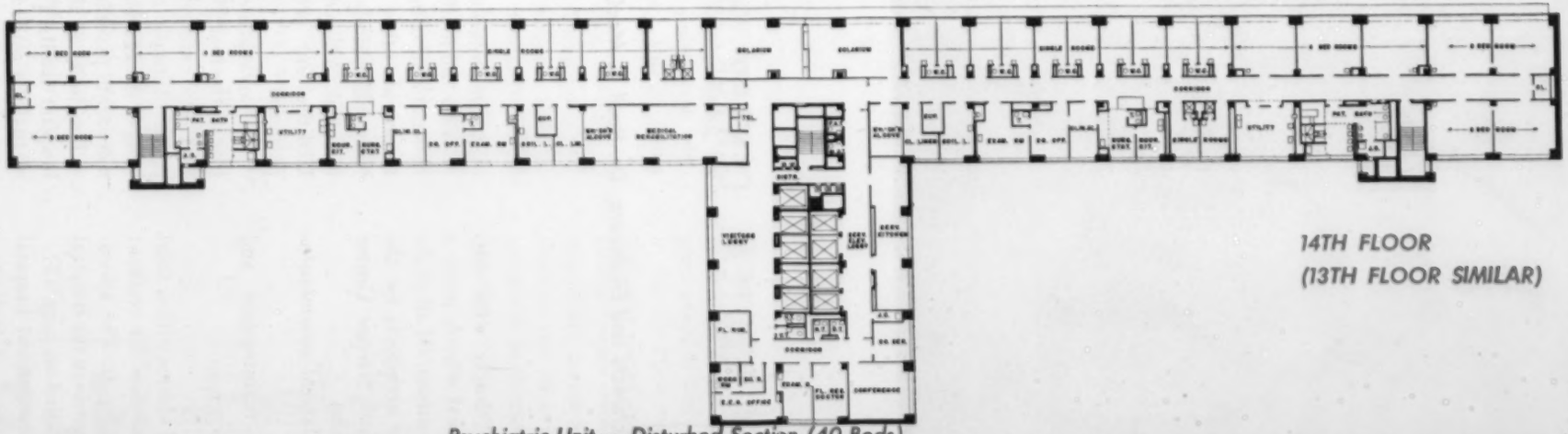
Typical Nursing Unit (40 Beds)



5TH–12TH FLOOR

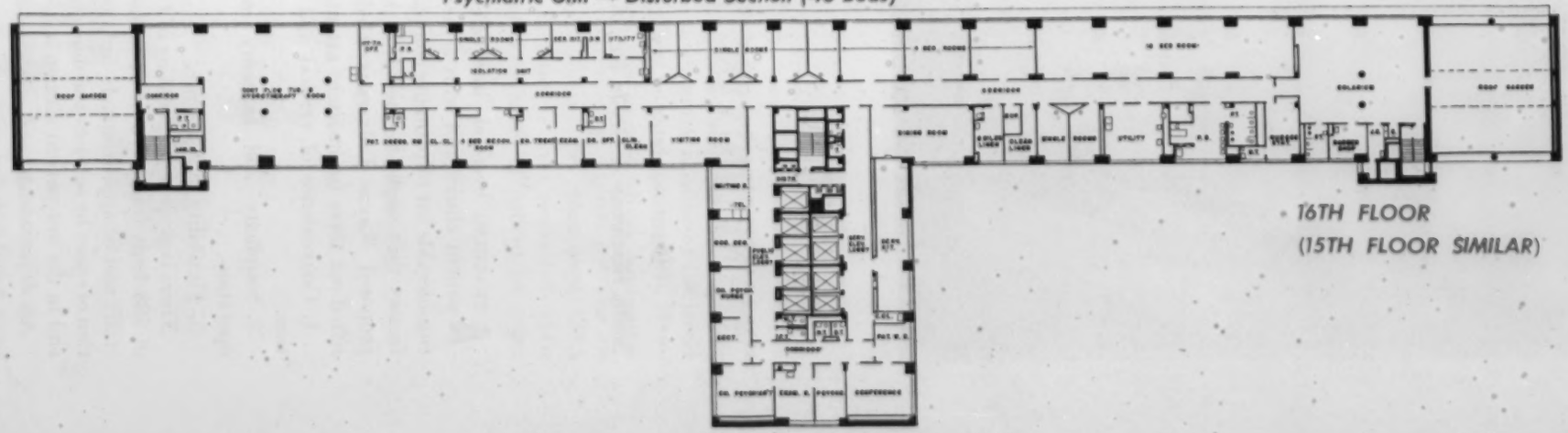
Neurological Nursing Unit (40 Beds)

Neurological Nursing Unit (40 Beds)

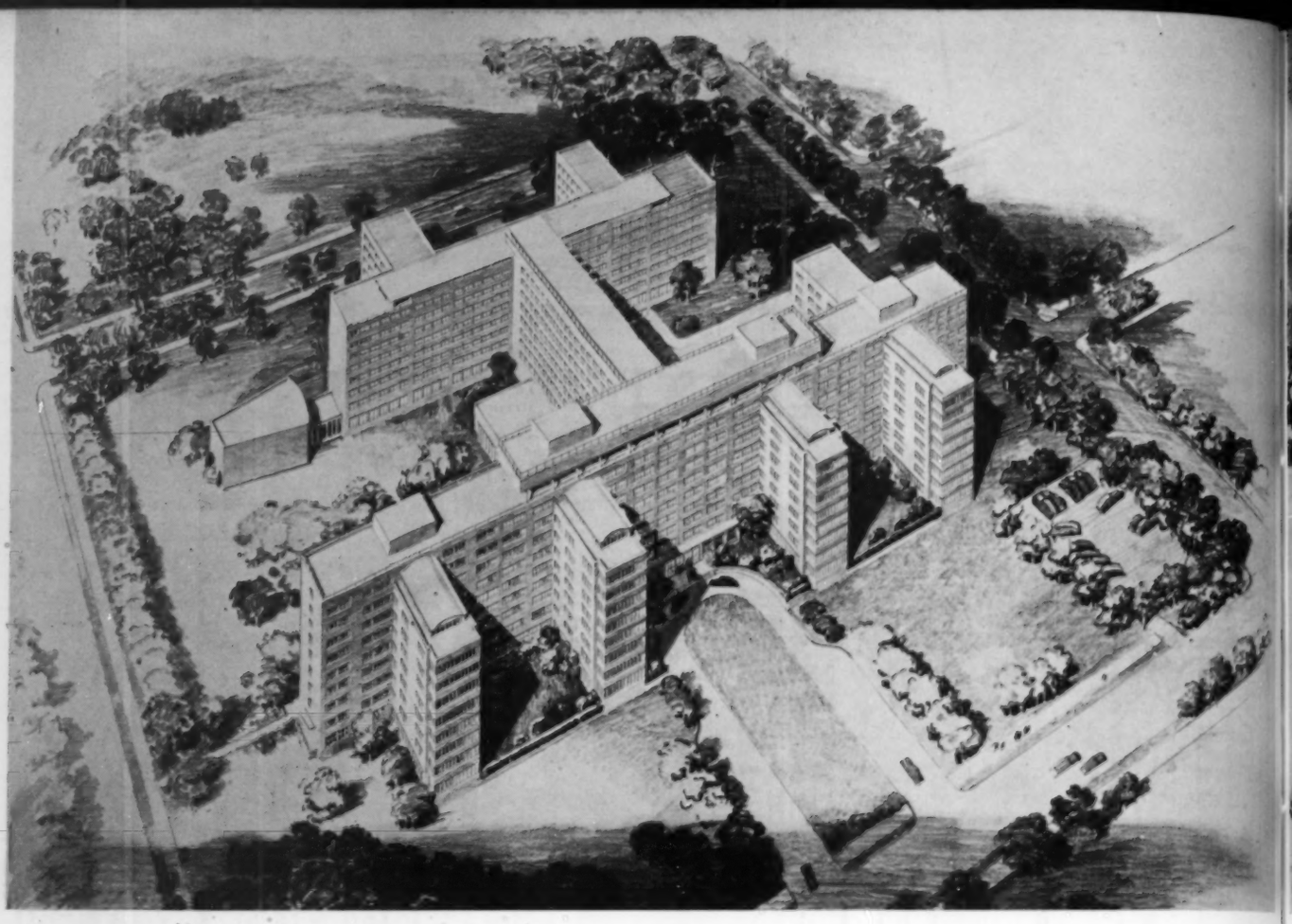


14TH FLOOR
(13TH FLOOR SIMILAR)

Psychiatric Unit — Disturbed Section (40 Beds)



16TH FLOOR
(15TH FLOOR SIMILAR)



WAYNE UNIVERSITY MEDICAL CENTER, *DETROIT, MICH.*

Smith, Hinchman & Grylls, Inc., Architects and Engineers; Dr. Basil C. MacLean, Hospital Consultant

A TEACHING hospital, integrated closely with out-patient clinics and with a medical school, poses a considerable list of planning complications. Of all of the factors that might be included, the architects for the proposed Wayne University Medical Science Center sifted out three for insistent attention:

1. Convenience of vertical and lateral communication.
2. Simplicity and economy in maintenance and operation.
3. Flexibility of space use.

There is projected a building of 11 stories with a total of 588 beds (exclusive of accommodation for resident staff) and of approximately 567,000 sq. ft. The allocation of space by services and departments in the hospital and in the out-patient section is detailed on page 127.

All departments and services of a general hospital have been included with the exception of Pediatrics and Infectious Disease, for which facilities exist in the adjacent Children's Hospital and Herman Kiefer Hospital. The customary facilities are provided, however, for isolation of some patients in the obstetrical division and limited isolation facilities exist on all floors. It is not now considered a function of a general hospital to provide other than diagnostic facilities for patients with tuberculosis, and such a section therefore is not included. A Psychiatric Division is not included, but facilities are provided on each floor for disturbed patients.

The arrangement of wings contributes to all of the three principal planning considerations. It will be seen that the extensive structure divides into four main parts. (Actually there are only three, but the crossover wing of the H adds so much to flexibility that it becomes a separate planning device.)

The bulk of the large, front part of the H is the hospital itself. The cross-shaped end of this wing is virtually a separate structure to house the out-patient department. The small section of the H is the medical school. The crossover section adds space to the school or the hospital as required on a given floor, or is occupied by auditoriums, offices or other miscellaneous spaces.

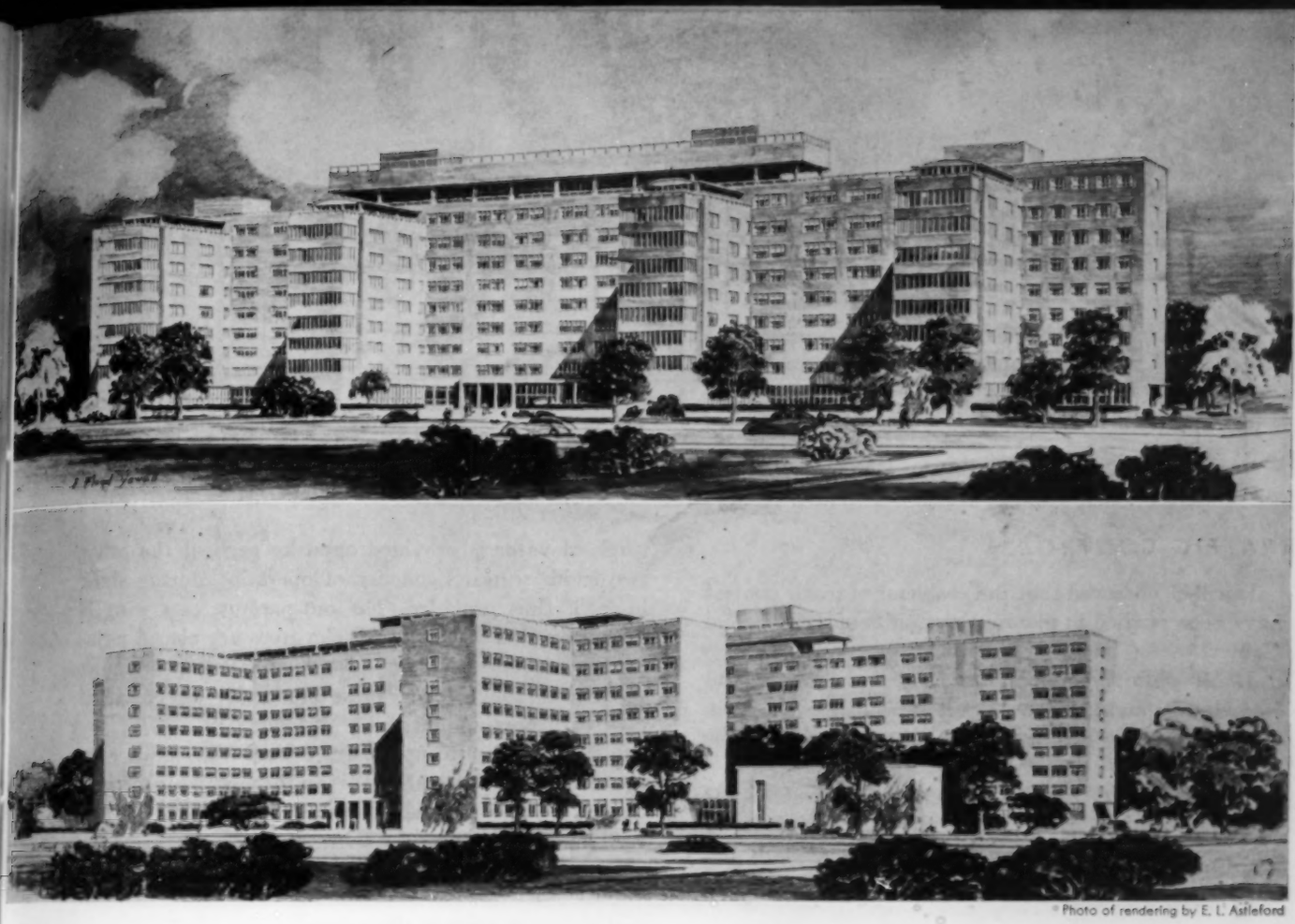


Photo of rendering by E. L. Astleford

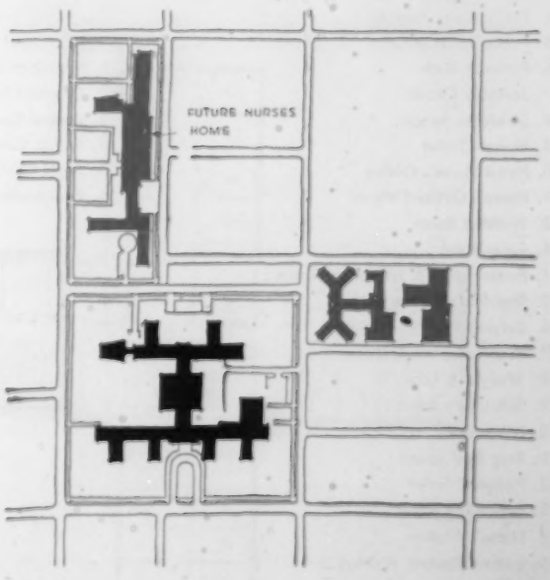
Thus departmental separations, floor by floor, can be maintained, with the crossover section making up differences in space needs. It will be understood, also, that as future changes become necessary, this flexibility will come further into play.

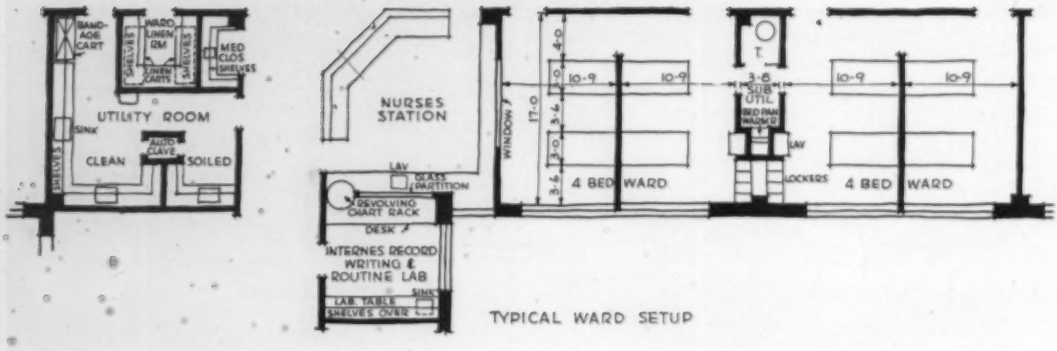
The out-patient department becomes in effect a separate building, with its own vertical transportation, matching departments of the main hospital floor by floor. Notice that there is a certain flexibility in this arrangement: one section can flow into the other as may be. The X-ray department, for example, is used extensively for out-patients, but also serves the whole hospital and the school.

It must be pointed out that such a disposition of the out-patient areas does raise a problem of traffic control. It may require some forethought in operation to keep out-patients from wandering into hospital areas when sent to upper floors. But it is of untold benefit in maintaining logical departmental separations, at the same time providing flexibility throughout the whole institution.

As for flexibility, there is a special device in the correlation of the out-patient and emergency departments. Out-patient receiving has a heavy load in the daytime, practically none at night; emergency has its heavy load at night. So the out-patient receiving desk is so placed as to face its operation in the other direction in emergency hours.

It will be observed that flexibility of use of in-patient accommodation is provided by placing approximately 15 per cent of the beds in single units. The original recommendation of the consultant was for a greater percentage of beds in single units, because of the trend in this direction in modern hospital construction. However, the use of an eight-bed unit, subdivided into four two-bed units with connecting sub-utility, provides an important factor of flexibility. (See plan page 126.) Greater use of bed facilities is thus permitted when recurrent problems of segregation of patient by type, age and sex are encountered.





TYPICAL WARD SETUP

TRAFFIC CONTROL

It will be observed that the problems of traffic control have been studied in planning the units of the Medical Center.

1. All ordinary ambulatory traffic will enter and leave by the main entrance. Visitors will enter the main lobby, which is controlled by the proper administrative offices.

2. Out-patient entrance is at the east end of the building, opening directly on the out-patient lobby with the proper administrative offices for the reception and distribution of patients.

3. Emergency department traffic, ambulatory and vehicular, will use separate entrances at the east side of the northeast wing.

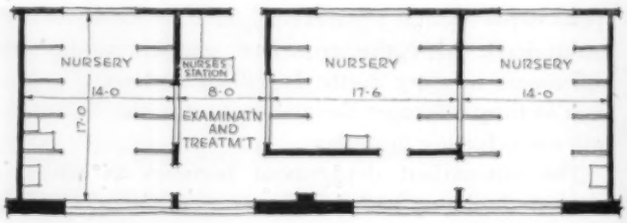
4. An entrance at the west end of the main corridor is provided for use of nurses in the nearby dormitory and for access to doctors' parking space.

5. Receiving department traffic is provided for on depressed ground level in the east court to give ready access to kitchen and other storage facilities.

Cross traffic will be avoided by the arrangement shown on drawings. Four elevators are banked in one bay off the main corridor and to the left of the main lobby. A single elevator is provided opposite each of the other two south wings. Economy of operation during slack hours is thus provided. The out-patient, east wing is served by two elevators. All elevators are placed adjacent to stairs, so that one- or two-story elevator traffic may be minimized and these are under direct visual control of nursing units.

6. One main entrance to the school will enable easy control of incoming traffic. It is on the north side directly opposite and connected by the main through corridor to the main entrance of the hospital.

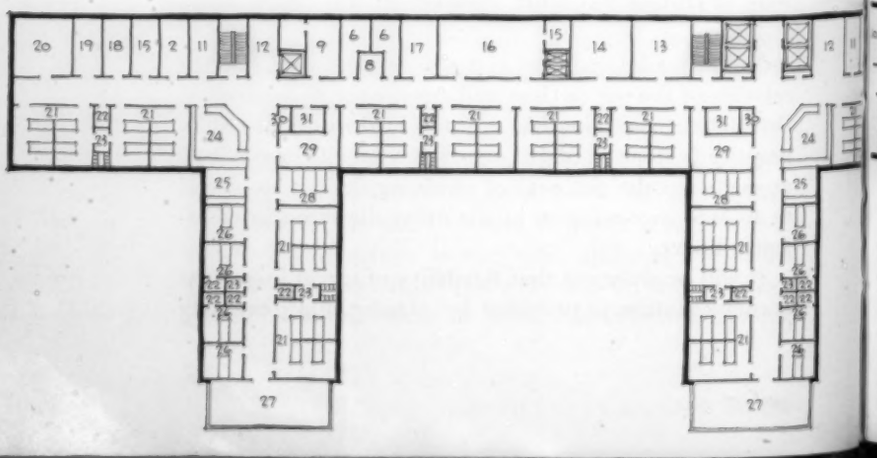
7. An entrance is provided on the west end of the main cross corridor of the school for use when the auditorium is open to the public.



TYPICAL NURSERY

L E G E N D

1. Dept. Office
2. Staff Offices
3. Duct Space
4. Public Toilet Female
5. Public Toilet Male
6. Patients' Bath
7. Janitor's Closet
8. Stretcher Space
9. Nurses' Toilet
10. Head Nurse's Office
11. Nurse's Office (Ward)
12. Waiting Room
13. Class Room
14. Examination & Treatment Room
15. Dietitian's Office
16. Serving Pantry
17. Housekeeper's Office
18. Weighing Room
19. Sub-utility Room
20. Laboratory
21. Four Bed Ward
22. Patients' Toilet
23. Sub-utility Room
24. Nurse's Station
25. Interns' Record Writing
26. Single Room
27. Solarium
28. Two Bed Ward
29. Utility Room
30. Medicine Locker
31. Sub Linen Room
32. Constant Temperature
33. Record Communication
34. O.P.D. Control Desk
35. Staff Conference Room
36. Examination Rooms
37. Laboratory (Routine)
38. Cold Room
39. Dark Room
40. Electrocardiograph Room
41. Office & Files
42. Fluoroscopic Room
43. Special Cardiac Room
44. Flower Room
45. Rubbish Room
46. Chemical Laboratory
47. Balance Room

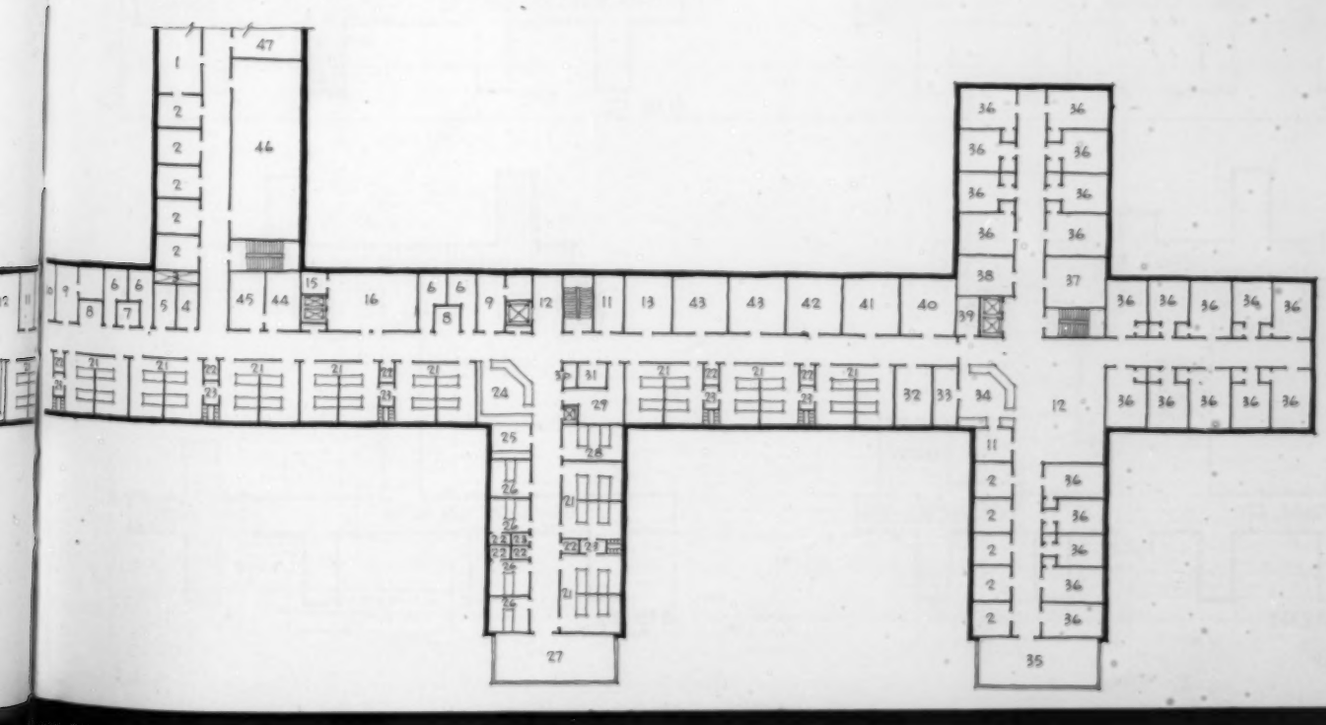


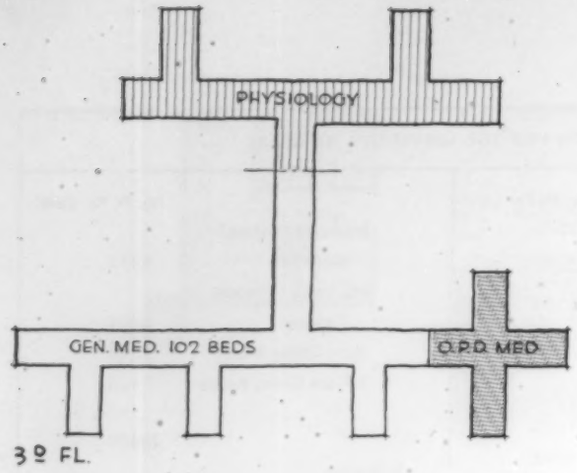
DETAILED AREA AND PERCENTAGE AREA DISTRIBUTION FOR THE UNIVERSITY HOSPITAL*

	Sq. Ft.	Per Cent
A. PATIENT AREAS		
1 Bed	70194	
2 Service (Floor)	52980	
	123174	21.7
B. PATIENT SERVICE AREAS		
1 Operating Suite	9482	
2 Delivery Room Suite	10020	
3 Nursery	4414	
4 Formula Room	660	
5 Emergency	8461	
6 Central Sterile Supplies	4740	
7 Patients Clothes Room		
8 Recovery Room	1044	
	38821	6.8
C. ADJUNCT PATIENT SERVICE AREAS		
1 Central Laboratory	6512	
2 Radiology	6564	
3 Pathology		
4 Physiotherapy	2160	
5 Pharmacy	10224	
6 Blood Bank	240	
7 E.K.G.—B.M.R.—E.E.G.	648	
8 Out-Patient Department	52784	
9 Gastroscopic Rooms	1152	
	80284	14.2
D. SERVICE DEPARTMENTS		
1 Dietary—Main Kitchen and Food Storage	25756	
2 Receiving & Stores—Purch.	1550	
3 Maint. Equip. Stores		
4 Machine Rooms	1152	
5 Housekeeping	3846	
6 Tunnels—Pipes	6000	
	38304	6.8
E. ADMINISTRATION SERVICES		
1 Administration		
a. Director and Staff	2267	
b. Board and Conference	1933	
c. Business Offices	5176	
d. Admitting Offices	1584	
e. Tel. & Information	3782	
f. Patients' Library	976	
g. Record Room	7620	
h. Unassigned Office Space	1701	
i. Mail Room—Post Office	1144	
	26183	
2 Visitor Facilities		
a. Lobby	3168	
b. Gift Shop	180	
c. Coffee Shop	624	
d. Toilets, Lounge	570	
	26183	
3 Professional Service		
a. Staff Lounge	1044	
b. Volunteer's Room		
	1044	
4 Employee Facilities		
Nurse Lockers—Rest Room	6104	
Employee Lockers—Rest Room	3312	
Employee Cafeteria (Ground)	5004	
Main Dining Room	9792	
Private Dining Rooms	1440	
	25652	
5 Storage		
Machine Rooms, Storage	11180	
	68601	12.1
F. RESIDENT STAFF QUARTERS		
Living Quarters	24808	
Recreation	11880	
	36688	6.5
G. EDUCATION AND RESEARCH		
Laboratories—Offices	30964	
Student Health	2242	
Amphitheaters	8211	
Class Rooms, etc.	11052	
School of Mortuary Science	5172	
Photography	2640	
Animal Storage	11880	
	72161	12.7
H. CIRCULATION		
Stairs, Elevators & Corridors	108742	19.2
Total	566775	100.0

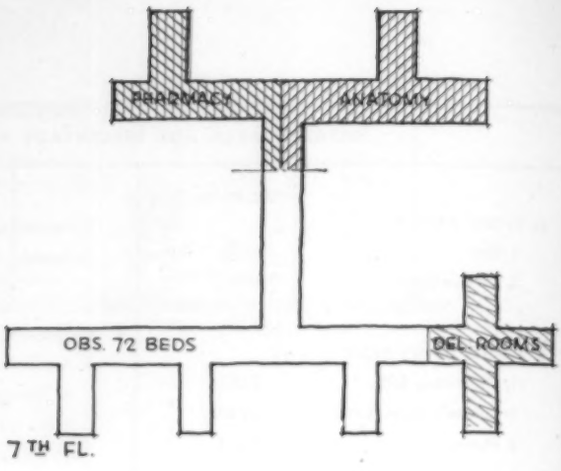
(*Including Clinical Departments, Research and Teaching Facilities and Resident Staff Quarters.)

SAMPLE FLOOR PLAN (THE THIRD)

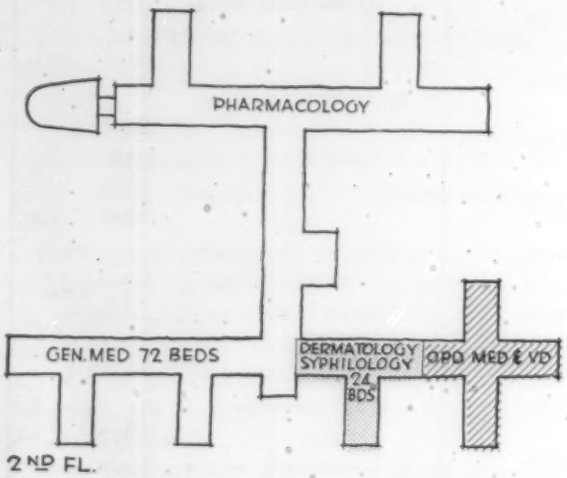




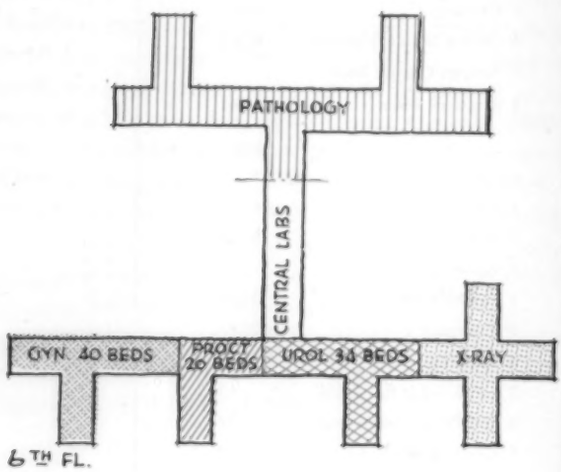
3RD FL.



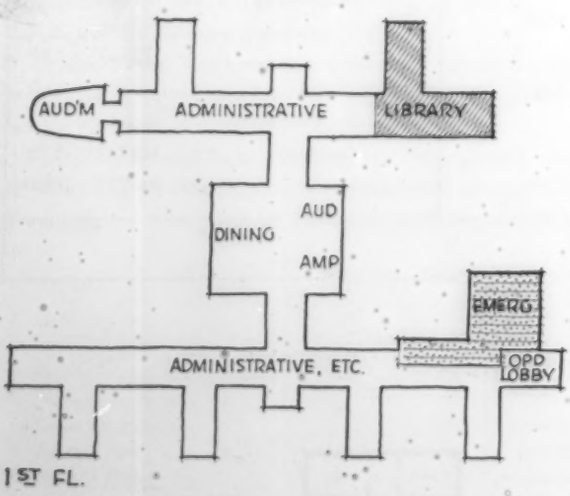
7TH FL.



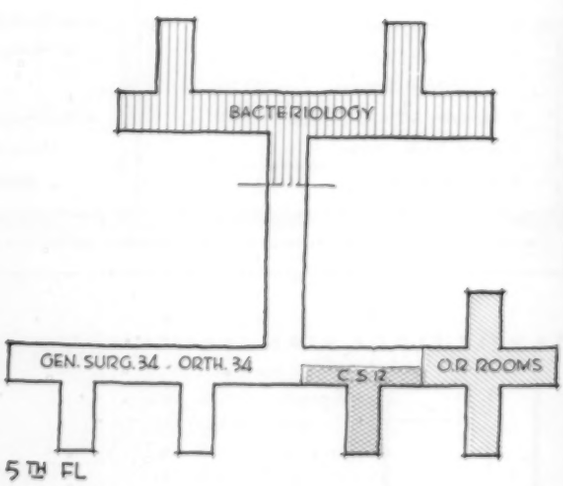
2ND FL.



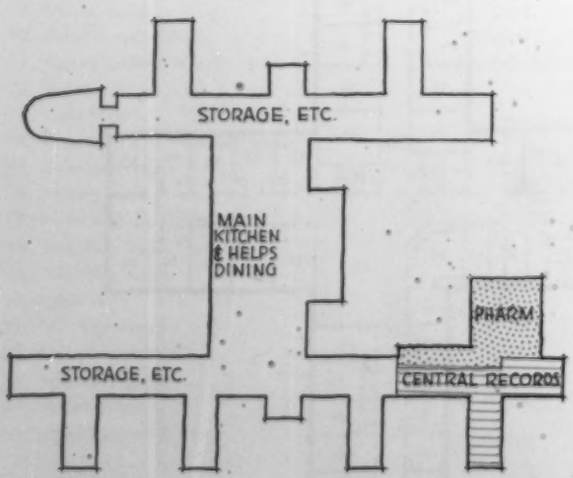
6TH FL.



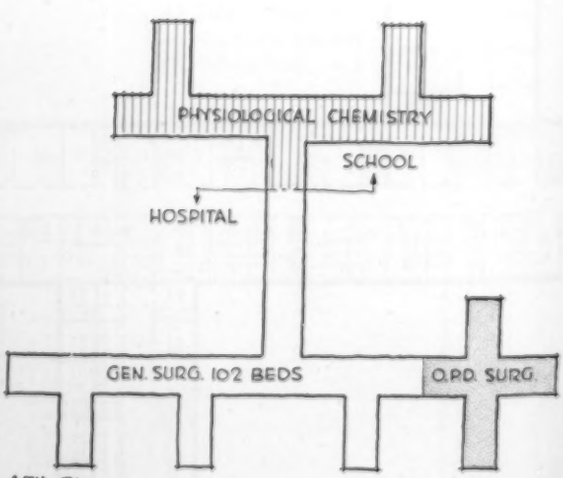
1ST FL.



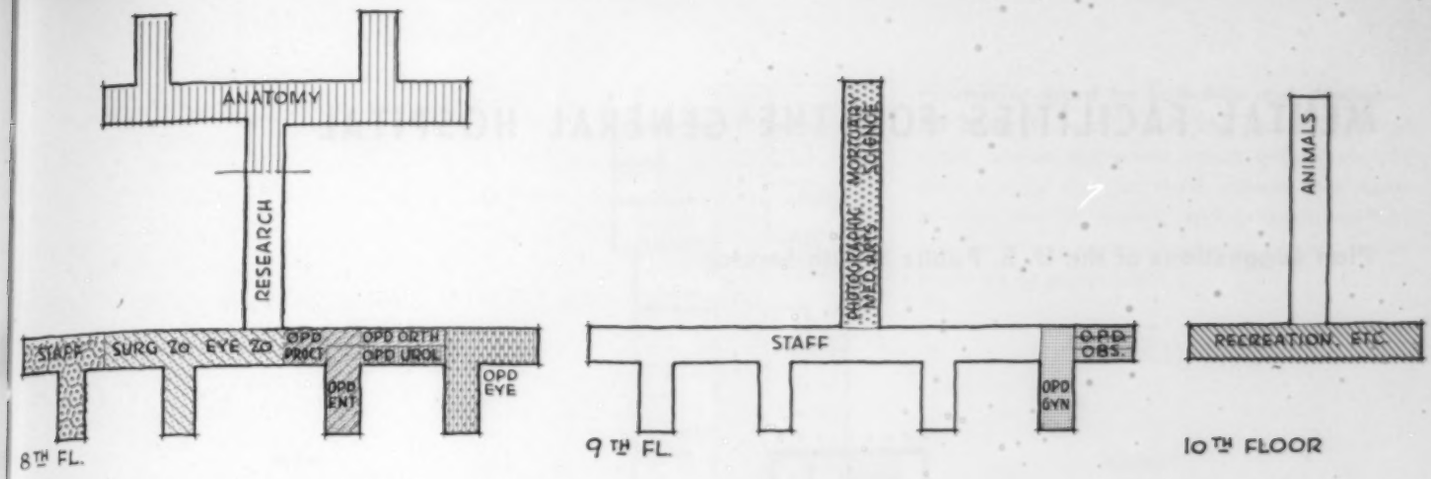
5TH FL



BASEMENT

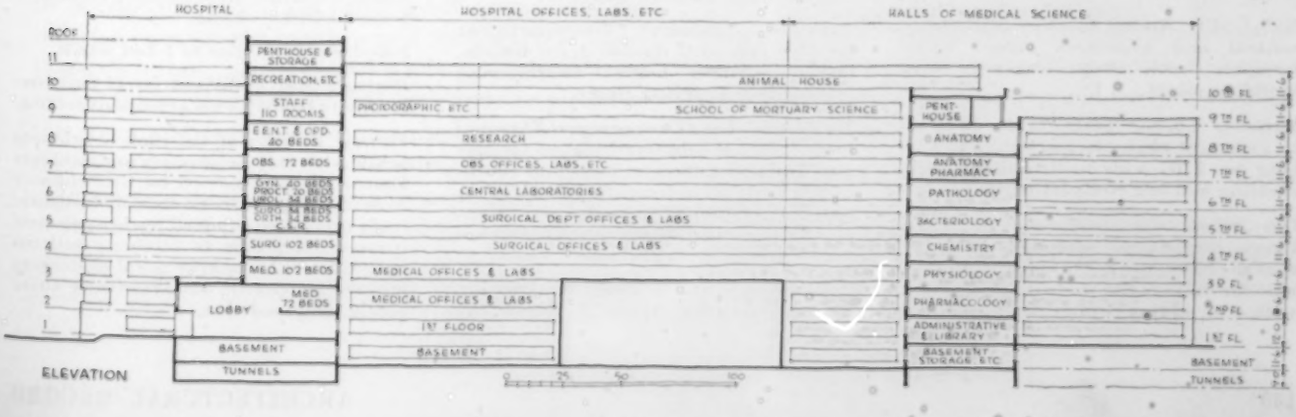


4TH FL



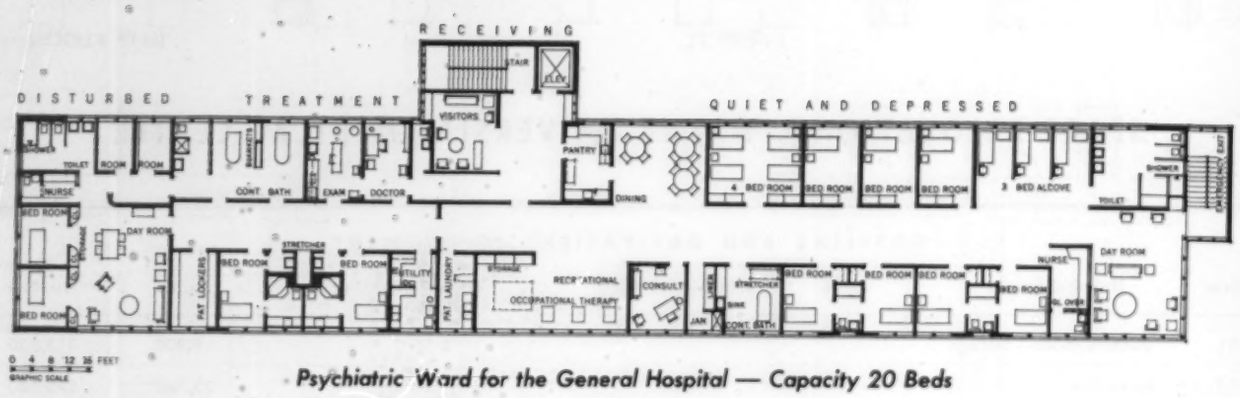
SPACE ALLOCATIONS, WAYNE UNIVERSITY MEDICAL CENTER

HOSPITAL AND OUT-PATIENT DEPARTMENT						
Floor	**Hospital Proper**	**Beds**	**Out-Patient Wing**	**Connecting Unit**	**Sq. Ft.**	**Cu. Ft.**
11	Machine Rooms—Storage				9,900	113,850
10	Recreation			Animal Storage	23,760	273,240
9	Resident Staff Quarters		Resident Staff	Mortuary Science-Photography	43,768	503,332
8	E.E.N.T. Beds, Obs., Gyn. E.N.T., O.P.D.	40	Eye O.P.D.	Obs-Gyn Laboratories & Offices	48,104	549,562
7	Obstetric Beds	72	(Delivery Rooms)	Obs-Gyn Labs & Offices	47,788	549,562
6	Gynecology, Surgery, Urology Beds	102	(X-Ray Dept.) (Physiotherapy)	Central Laboratories Hospital	48,252	554,898
5	Surgery, Orthopedic Beds, Central Surgical Supply	68	(Operating Rooms)	Surgery Offices and Laboratories	48,180	554,070
4	Surgery Beds	102	Surgery O.P.D.	Surgery Offices & Labs	48,180	554,070
3	Medicine Beds	102	Medicine O.P.D.	Medical Offices & Labs	48,180	554,070
2	Medicine Beds	102	Medicine O.P.D.	Medical Offices & Labs	50,566	581,509
1	Administration, etc.		O.P.D. Administration, Emergency	Main Dining Room, Auditorium	68,077	782,886
B	Locker Rooms, Service Storage, Cafeteria		(Record Room) (Pharmacy)	Kitchen—Food Storage	76,020	874,230
G	Pipe Tunnels, etc.				6,000	69,000
	Totals	**588**			**566,775**	**6,517,913**



MENTAL FACILITIES FOR THE GENERAL HOSPITAL

Plan suggestions of the U. S. Public Health Service



Psychiatric Ward for the General Hospital — Capacity 20 Beds

Stair Hall: continuous banisters from stair stringer to stringer with handrail attached to the side of banisters are advisable.

Lobby: attendant's desk and chair.

Visitors: large, heavy, overstuffed attractive furniture arranged for grouping of visitors and patients.

Doctor's Office: desk, 34 by 54 in.; chair — executive type; 2 armchairs; paper receptacle; bookcase.

Examination Room: examining table; foot stool; paper dispenser; examining light; adjustable stool; adult scale; instrument sterilizer, 4 by 6 by 16 in.; lavatory with gooseneck spout and elbow control; wastepaper receptacle; table, 20 by 30 in.; straight chair; 60 in. counter 36 in. high with cabinets above and below; electric shock machine.

Tub Rooms: 2 continuous tubs; 2 movable screens; toilet; dressing area; needle shower; laundry tub; linen and blanket storage; drying cabinet.

Isolation Bed Rooms: bedside cabinet; adjustable hospital bed; straight chair.

Toilet Rooms: lavatory with gooseneck spout and elbow control; counter 4 ft. long with cabinets below; water closet with bedpan lugs and bedpan flushing attachment; square tub with grab bar; shower head.

Sub-Utility Room: lavatory with knee control and gooseneck spout; linen hamper; hook strip; cabinets over stretcher closet.

Patients' Locker Room: table, 30 by 42 in.; straight chair; locked cabinets 3 ft. long by 2 ft. wide with clothes pole, shelving and bag compartment.

Day Room for Disturbed Patients: heavy, large and sturdy divans, overstuffed chairs and table and chairs suitable for dining; tile walls to door height with 4 in. radius cove at corners and at base; acoustical treatment on walls above tile and on ceiling; built-in clothes lockers with tumbler locks.

Disturbed Patients' Bed Rooms: heavy iron bed; 4-ft. door opening out with 3-point latch to catch at top, bottom and center and with minimum projecting round knob handle.

Disturbed Patients' Toilet: 2 water closets, wall hung and without seat; toilet partition 4 in. thick by 4 ft. long by 3 ft. 6 in. high; shower with floor sloped to rear and shower head mounted on front wall at 7-ft. height and with locked controls in opposite wall; 2 lavatories; wall hung, unbreakable mirror.

Nurses' Stations: unbreakable glass; nurse's desk at counter, 30 in. high; chair; wastepaper receptacle; telephone outlet; counter with cabinets below and with medicine sink and with gooseneck spout; locked wall cabinet with locked narcotic cabinet; stool; bulletin board; chart rack.

Utility Room: laundry hamper; single compartment laundry tray with drain board; counter 36 in. high with cabinets below; single element hot plate on wall bracket; sink in counter with gooseneck spout and elbow control; bulletin board; instrument sterilizer, 4 by 6 by 16 in.; wall cabinet; utensil sterilizer, 20 by 20 by 24 in.; dressing cart (under wall cabinets); clinical sink; sanitary waste receptacle; wastepaper receptacle.

Patients' Laundry: 2-compartment laundry tub with double drain boards, locked cabinets below; disappearing ironing board; drying closet.

Recreational and Occupational Therapy: locked storage cabinets designed for easy and quick inventory of tools and equipment; for types of recreational and occupational equipment possible see "General Notes"; include outlets and screen for movies.

Consultation Room: desk, 30 by 54 in.; chair — executive type; 2 armchairs; short divan; wastepaper receptacle; desk telephone.

Storage Closet.

Janitor's Closet: mop cart; curb and floor drain below slop sink; shelf; hook strip for mops.

Continuous Bath: continuous tub with controls on corridor wall; storage closets; movable table.

Bed Rooms with Connecting Bath: built-in closet with shelf and clothes pole; bedside cabinet; bed; 2 straight chairs; wastepaper receptacle; desk, 30 by 48 in.; dresser.

Connecting Lavatory: tub with shower head, curtain rod and shower curtain; lavatory; water closet; clothes hooks; waste receptacle. (*Note:* Connecting doors to be locked from bed room side only.)

Day Room for Quiet Patients: large room equipped as living room with storage closet for games, etc.

Toilet: 3 lavatories; unbreakable mirror; 2 water closets — wall hung with toilet partitions 5 ft. long by 4 ft. 6 in. high; tub and shower to be locked.

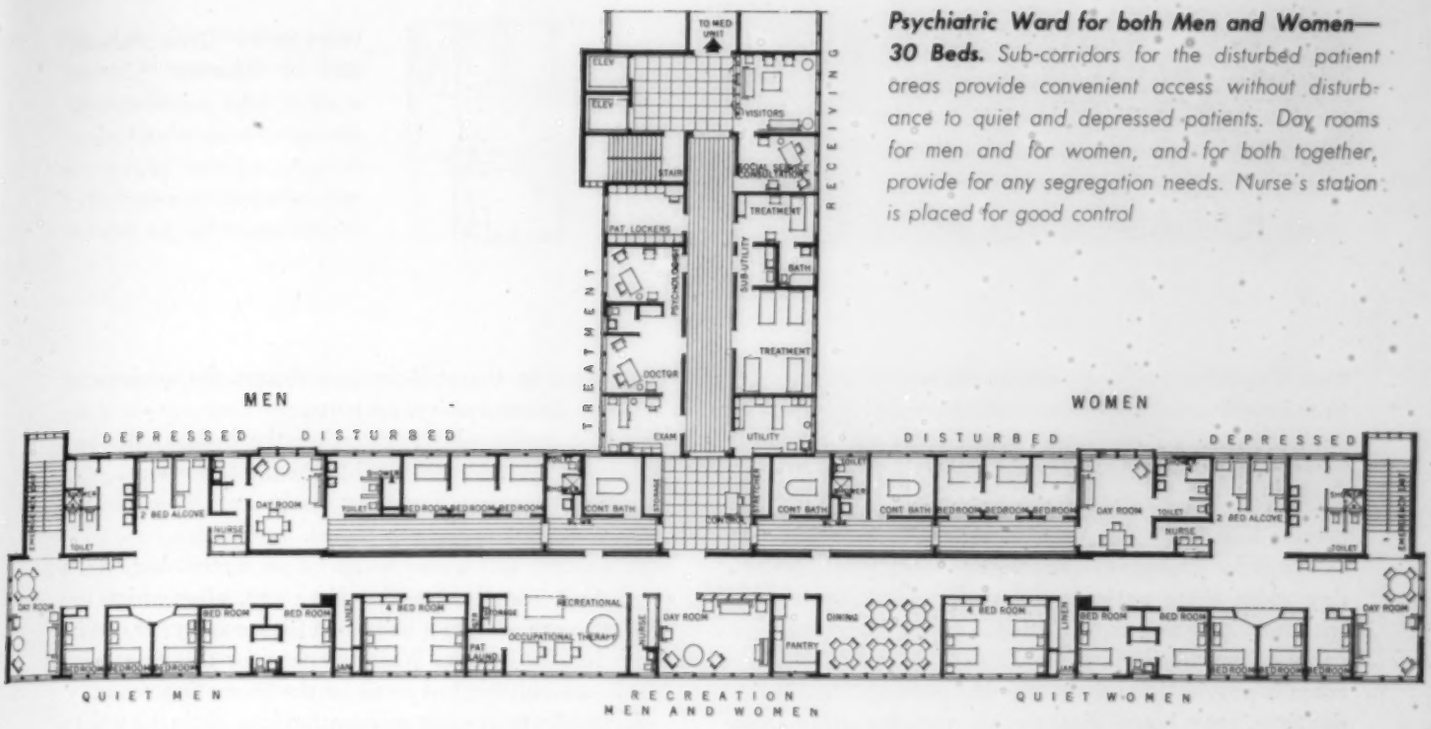
3-Bed Alcove: bed; bedside chest; movable clothes locker; wood panel partitions 9 ft. long by 5 ft. high.

4-Bed Ward: built-in clothes lockers; 4 beds; 4 bedside chests.

2-Bed Ward: similar to 4-bed wards.

Dining Room: sufficient for 12 patients; complete facility with attendant service.

Pantry: counter 36 in. high — cabinets below with sink in counter and cabinets above; refrigerator — 8 cu. ft.; counter — 36 in. high with electric dishwasher; juice extractor; cracked ice bin; electric toaster; telephone to kitchen; bulletin board; towel bar; paper towel container; double element hot plate; sanitary waste receptacle; food cart.



Psychiatric Ward for both Men and Women—30 Beds. *Sub-corridors for the disturbed patient areas provide convenient access without disturbance to quiet and depressed patients. Day rooms for men and for women, and for both together, provide for any segregation needs. Nurse's station is placed for good control*

THESE plans* were developed to show facilities and arrangements required to provide diagnostic service and short-term care (up to six months) for mental patients in the general hospital. Authorities vary in their estimates of the required number of beds for this service, placing them from 10 to 25 per cent of the total bed capacity of the general hospital; but all agree that not less than 10 per cent of the total bed capacity should be for this service. For flexibility and easy expansion, this service should be located near the medical wards.

Since considerable space is needed for treatment, recreational and occupational areas, a unit of 20 beds is considered minimum for desired economy. The plan shown on the opposite page, with detailed legend, is described in full. The remaining plans, developed to provide for both sexes, or for segregation by floor of the various classifications of patients, have additional comments.

In the first plan, the major sections of the ward are: (1) receiving and treatment area; (2) disturbed patients' area; (3) quiet and depressed patients' area.

The ward, as planned, is designed to provide for all types of patients of either sex.

Should it be decided to accommodate both sexes in one ward, additional toilet and bathing facilities could be provided in one of the existing bed rooms; and the isolation or receiving rooms would then serve as additional disturbed patient areas for men or women. However, it is not recommended that both sexes be placed in this ward, and any administrator would require careful selection of patients before attempting this.

In meeting the minimum requirements of 10 per cent of the total bed capacity of the general hospital, this plan should not be repeated more than three times, as follows: (1) one floor for men patients; (2) one floor for women patients; (3) one floor for convalescent patients of both sexes (if required).

Beyond this number of wards, it is advised that each floor or ward be designed for each particular classification of patients. This is shown (see page 132) in the three plans developed for the disturbed, intermediate and quiet classifications of patients. In expanding this service, it should be remembered that it is necessary to provide this service in the general hospital; and effort should be directed toward bringing this receiving and early care service back into the general hospital rather than planning separate or receiving hospitals.

Where the ward is to be used for training, additional offices for psychologists and physicians and for interviewing would be necessary.

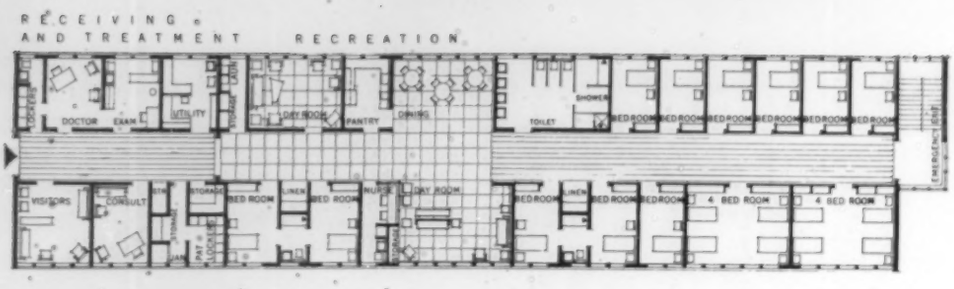
RECEIVING

Patients should be received (from the out-patient department, from private doctors or, in emergency cases, from the ambulance entrance) in the visitors' room adjacent to the elevator and stair lobby. The sub-corridor provides access to the doctor's office without entry into the main living quarters for the well-conducted patients. From there patients may be assigned to the private rooms across from the doctor's examination rooms for a short period of observation. The patients' locker room is in this area for the receiving and careful marking of all clothes, gifts, etc.

DISTURBED PATIENTS

Disturbed patients' rooms are four in number, or 20 per cent of the total ward capacity. Two of these rooms are for the very noisy, and are screened from the day

*Developed in consultation with members of the American Psychiatric Association. Material prepared by Alsten G. Guttersen, Staff Architect, Division of Hospital Facilities, USPHS



Ward for 20 "Quiet" Patients, Men or Women. *The three plans on these pages were developed for cases where number of beds increases beyond the point where all classifications of patients could be put together*

room by a sub-corridor leading to the nurses' station and to the continuous-bath room. All rooms are in full view of the nurse and attendants on duty. Generally it is not considered good practice to plan quiet rooms off sub-corridors because of the lack of assurance of sufficient care and attention to these patients. However, with the sub-corridor leading directly to the nurses' station and day room these patients are under easy observation without disturbing those patients in the day room, and can receive sufficient care and attention. The large day room is provided for the remaining patients and, in the daytime, may house disagreeable patients away from the remainder of the ward. Toilet spaces are larger than normally used, and clothes lockers are placed off the day room, rather than in the bed rooms, and are under supervision of the nurse and attendants.

Since the nurse will spend most of her time in the day room with the patients, some doctors may wish to eliminate the nurses' station and nurses' toilet. Other doctors, who believe it is better practice to divide their staff so that disturbed patients are cared for by entirely different psychiatrists, nurses and attendants, will insist on the additional nurses' station in this area.

QUIET AND DEPRESSED PATIENTS

These cooperative and well-conducted patients are separated from the disturbed patients and receiving and treatment areas, and an effort is made to make these living quarters as pleasant as possible. Corridors are widened, and cross or exterior light is brought into them by opening up the recreation room, dining room and three-bed alcove. The nurses' station is projected into the corridor for complete observation of the corridor and day room, and is directly across the corridor from the three-bed alcove where the most depressed or suicidal patients are likely to be placed.

TREATMENT FACILITIES

The unit shown, together with the facilities of the general hospital, will provide all treatment necessary for intensive and short-term care. The maximum stay is estimated to be six months, after which, if patients have not recovered, they will be transferred to a private or state mental hospital.

The facilities particular to this service are as follows:

1. Continuous baths: The main tub room is located adjacent to the disturbed unit since these patients are in greater need of this facility. It is open for use by other patients, however, from the corridor; one additional tub is supplied in the well-conducted area for anxious or sleepless, but not noisy, patients.

2. Wet packs will be given on the beds in the bed rooms or on the movable tables in the tub rooms.

3. Salt rub or stimulating baths are given on the movable tables in the tub rooms.

4. Electric shock can be given on a stretcher which is wheeled into the examination room, after which the patient is wheeled to a bed room for recovery, or can be given in a bed room. Waiting space for this treatment can be a receiving bed room or the recreation room.

5. Insulin treatment preparation is made in the utility room; the treatment to be given in the larger ward.

6. Fever treatments by malaria will be given in bed rooms, the isolation rooms, or in the internal medicine section of the hospital. The inductotherm for electrical fever treatments is located in the out-patient and physiotherapy department, as it is there that the greatest use is made of that equipment.

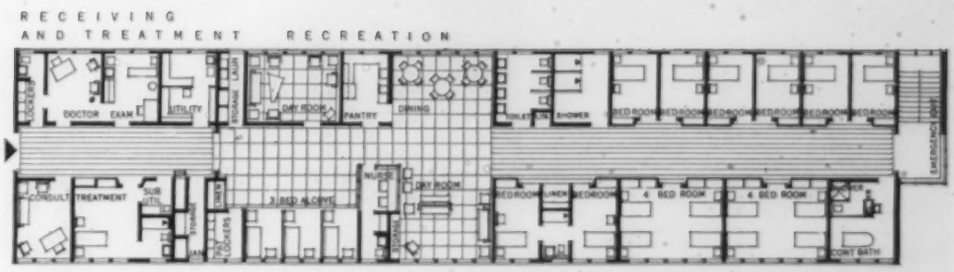
7. The electro-encephalograph is assumed to be located near the out-patient department or near surgery. While manufacturers are making portable equipment which can be used in unshielded rooms, for the most accurate work it is still considered advisable to provide a shielded room for this facility. It would consist of a small room completely shielded by a mesh of good electrical conductor. The room should be large enough for a bed or large chair for the patient, and a nurse or intern. A shielded view panel, approximately 12 by 24 in., is provided in one wall in order that the patient and nurse may be observed from the operator's room which is adjacent. The connections from patient to machine are made through the wall.

8. The receiving bed rooms across from the examination room are equipped to be used for the few cases requiring isolation techniques that might arise, and for treatments such as prolonged narcosis.

9. Consultation rooms. When more than one patient is housed in a room, it is necessary to have private consultation rooms for privacy of interviews. The doctor in charge has his office for this purpose, but it is advisable to have at least one additional office for private doctors whose patients are in the unit.

OCCUPATIONAL AND RECREATIONAL THERAPY

Since patients may live in this ward for a period up to six months, large areas must be devoted to suitable occupation and recreation. The general hospital will have



Ward for 20 Patients, either Men or Women, Classification "Intermediate." *Plans begin to get simpler when patients are closely classified. But the intermediate class still calls for close attention to patient supervision*

its regular occupational therapy departments, and those noisy occupations requiring bulky equipment such as carpenter work bench, bicycle jig saw, electric grinder, lathe, etc., should be available to patients from this ward. On this floor should be lighter, more easily supervised occupations such as painting, wood carving, leather work, light metal work, sewing, weaving, etc. Locked storage areas should be designed so that quick inventory of all tools and equipment can be made before patients leave the room.

This area is also designated as a recreation area, and is sufficient for shuffleboard, quoits, collapsible ping-pong table and small gym equipment such as demountable bar, wall ladder and stool, parallel bars, horse, pulley weight, exerciser, etc.

A patients' laundry room equipped for clothes washing and ironing is also necessary. Very often, when this facility is not supplied, the work is done in the utility room.

When possible, patients should have additional areas such as grounds or roof where outdoor exercise and play can be supervised.

Living, or day, rooms are located away from the traffic of incoming personnel, visitors or patients.

GENERAL NOTES ON MATERIALS AND CONSTRUCTION

The building must be fireproof and the details must be of very sturdy construction. Care must be taken to avoid sharp projections of corners of structures, exposed pipes, etc., and no designs or details should be accepted that could encourage suicidal attempts, hiding, etc.

The whole ward should be acoustically treated and, as a further aid in noise control, air conditioning is desirable in that section comprising Treatment and Disturbed Patients' area.

All patient bed room doors and the corridor door leading to disturbed patients' day room should have view panels of unbreakable glass; long, vertical panels approximately 6 in. wide to provide easy observation. Doors should be 3 ft. 10 in. to 4 ft. wide, have hidden hinges, and cylinder locks, and those doors in the Treatment and Disturbed Patients' area should be of heavy insulated design to avoid breaking and noise disturbance. Rubber door jambs will decrease noise.

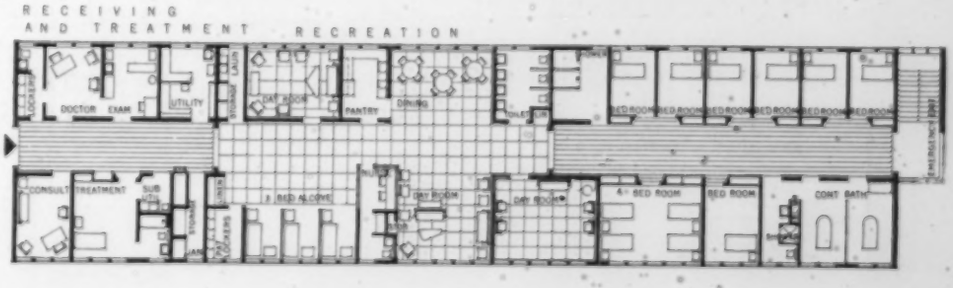
If detention-type screens are used, ordinary windows and glass are possible. These screens have the added advantage of permitting the screen to be flush with the wall and thus eliminating projections and corners. When detention screens are not used, windows of sturdy design operated by a removable crank are recommended. These should be of such design that no opening large enough to permit exit is possible but still provide sufficient ventilation. No windows should swing into the room when opened.

The ideal heating system, particularly in the Disturbed Patients' Section, would be radiant, and installed in the floor or ceiling. Should radiators be recessed into walls and concealed back of grilles, coves sloping outward to the floor should be provided for cleanliness.

Floors should be of rubber or asphalt tile except in wet sections and in seclusion bed rooms, where non-slip or quarry tile is recommended for easy cleaning. A 4-in. radius cove base at junction of floor and wall is recommended for cleanliness.

Walls can be of plaster except in wet sections and in Disturbed Patients' and Treatment areas, where they should be of tile to door height. Interior and exterior corners should be finished with rounded intersections of 3 in. radius. Above the tile wainscot the walls should be of non-absorbent materials in wet sections and of acoustical materials in other sections.

Ceilings should be of acoustical material throughout except for wet sections where they should be of non-absorbent material and stainproof.



Ward for 15 Patients, either Men or Women, Classification "Disturbed." *This is different from the one above mainly in facilities. The extra day room in this plan is to be open to outside, more a porch than a room*

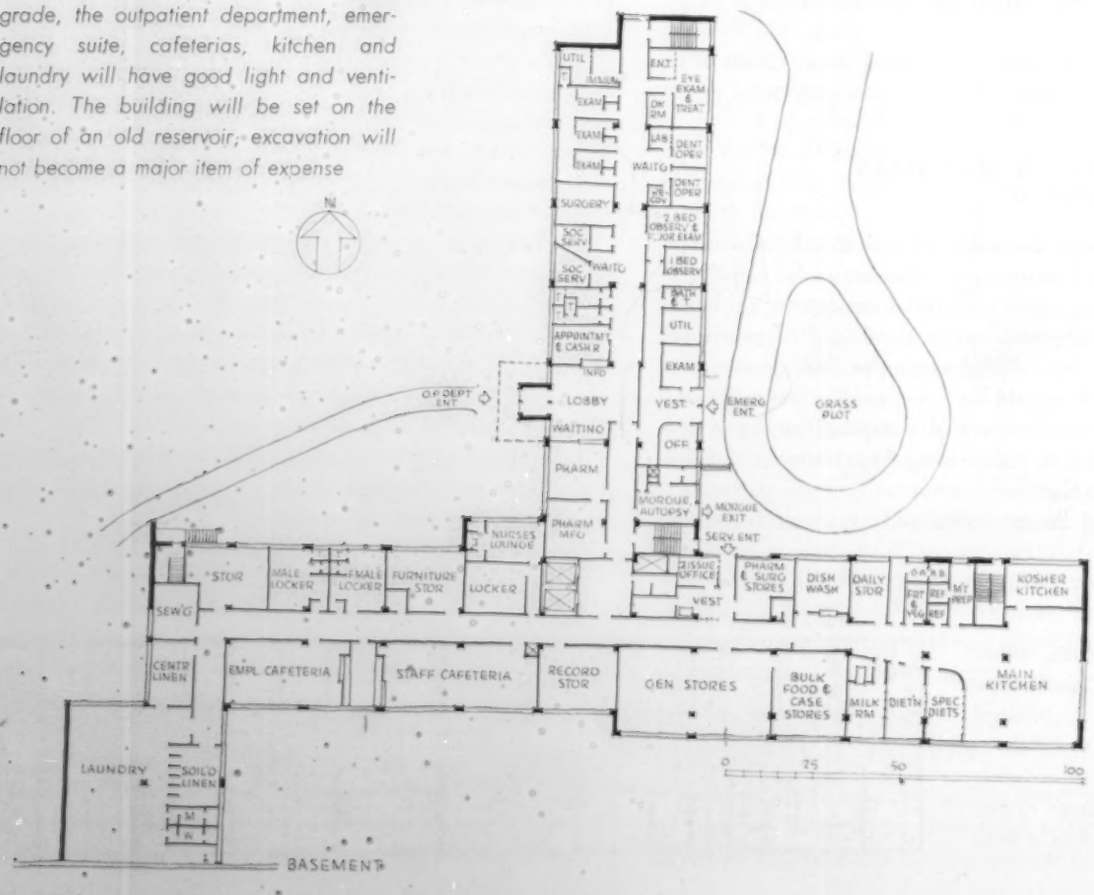
Beth Israel Hospital, Passaic, N. J., Kelly & Gruzen, Architect-Engineers; Isadore Rosenfield, Hospital Consultant

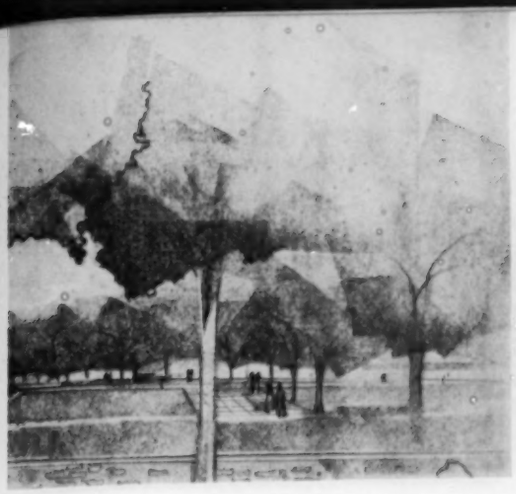
100-BED HOSPITAL ON 150-BED CHASSIS

By Isadore Rosenfield

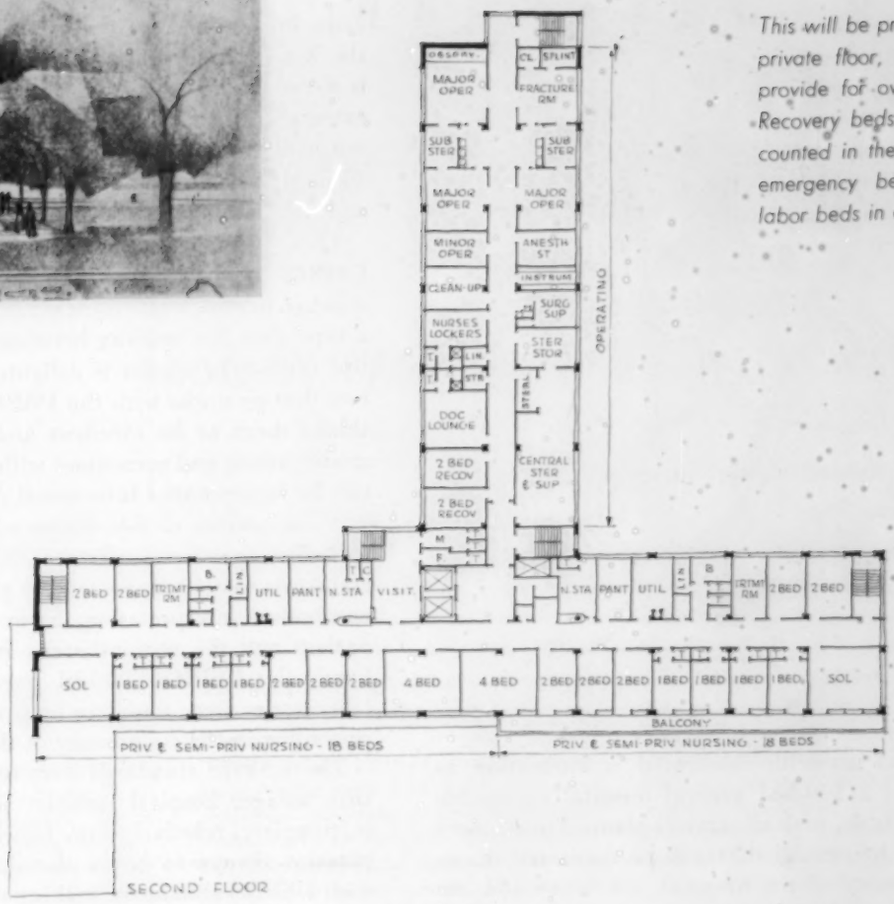
IT is no exaggeration to state that almost all communities in the United States hope to benefit under the Hospital Survey and Construction Act. Judging by the existing proportion between general hospitals under 100 beds and those of 100 and more, it may be expected that the majority of applicants for federal assistance will want hospitals under 100 beds. It would seem that such applicants for small hospitals would have difficulty in obtaining federal approval if the reason is the unwillingness to cooperate or the inability to obtain cooperation from neighboring communities. Hospitals under 100 beds are justified only under conditions of great sparsity of population involving great distances, or physical inaccessibility. Under the above circumstances there will probably develop a considerable demand for hospitals of about 100-bed capacity. If that is the size of hospital most of us will be called upon to plan, then that is the size we should study.

The basement being completely above grade, the outpatient department, emergency suite, cafeterias, kitchen and laundry will have good light and ventilation. The building will be set on the floor of an old reservoir; excavation will not become a major item of expense

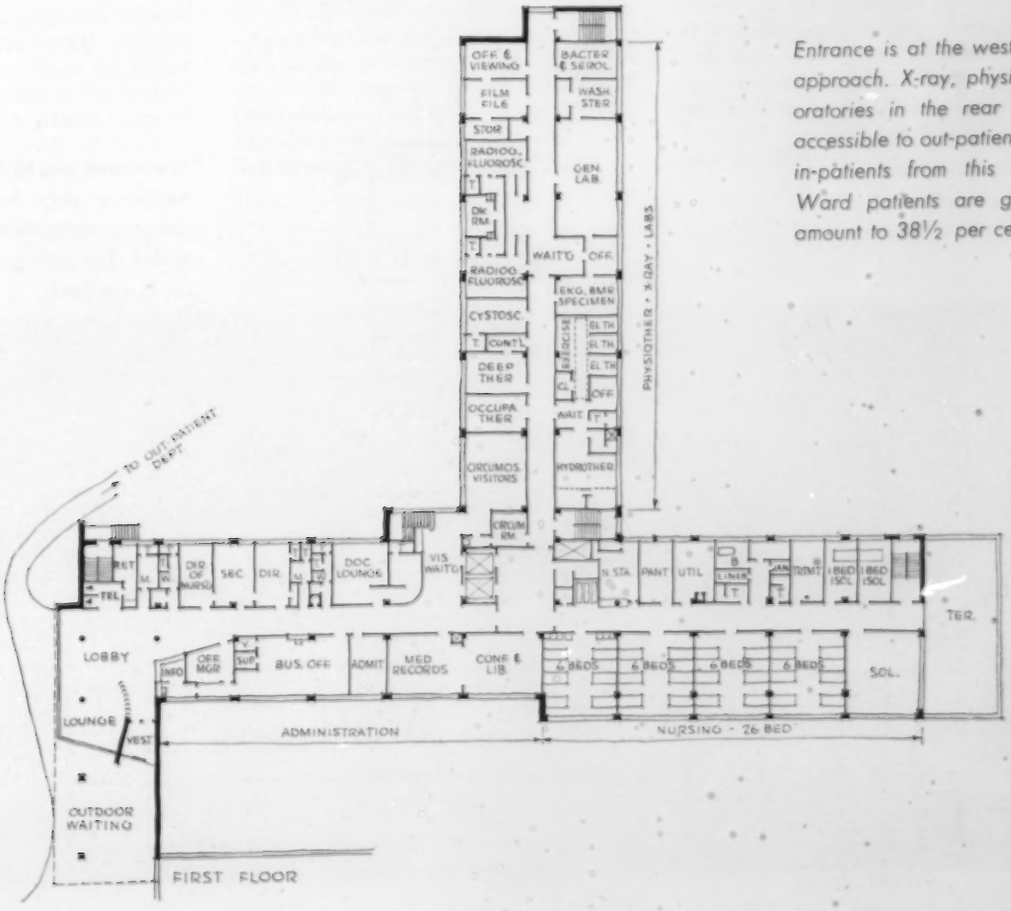


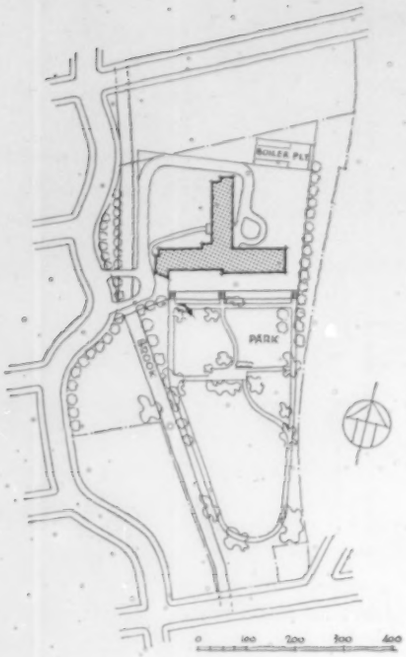


This will be primarily a private and semi-private floor, but two 4-bed rooms will provide for overflow for ward patients. Recovery beds in operating suite are not counted in the bed capacity; neither are emergency beds, or the bassinets, or labor beds in obstetrical unit



Entrance is at the west end, at the street approach. X-ray, physiotherapy and laboratories in the rear wing are equally accessible to out-patients from below and in-patients from this and other floors. Ward patients are grouped here; will amount to 38½ per cent of total



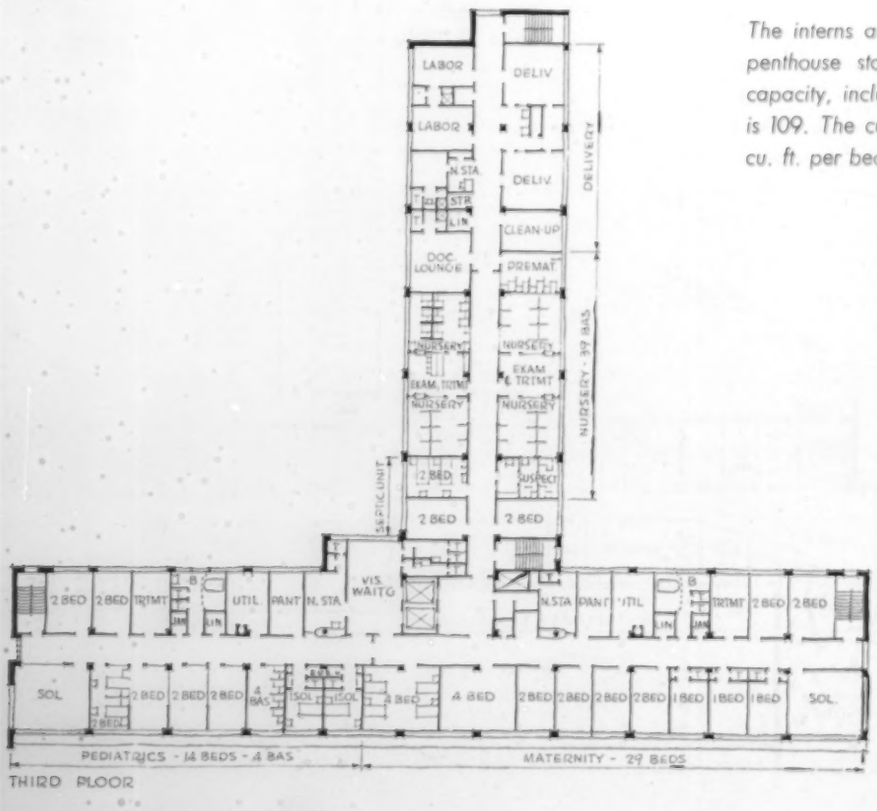


The hospital herewith illustrated is interesting as an example of a 100-bed general hospital expansible to at least 150 beds, with all services planned in advance for the larger figure. All that will be necessary to expand the capacity of the hospital will be to add the patients' wards and rooms at the ends of the nursing units. The simple truth is that it is not difficult to add beds, but to increase the capacity of such services as the X-ray, the operating suite, the delivery suite, etc., is a very difficult matter. These ancillary services are extremely organic in their nature. To expand them is not a matter simply of adding something at one end; such expansion affects many of the constituent elements and necessitates the addition of some new ones.

This hospital is also interesting with respect to the USPHS standards. It will be recalled that these standards are for 50–, 100– and 200–bed types. Here we have a type that lies halfway between the 100- and the 200-bed types. The author is delighted to acknowledge the fact that he works with the USPHS standards, that he thinks them to be excellent and finds that with few modifications and sometimes without modification they can be incorporated into actual designs.

A comparison of this design with USPHS standards will show that frequently the 200-bed ancillary service standards were used. Some were given a somewhat more economical interpretation, as in the case of the outpatient and the physiotherapy cubicles. On the other hand, the USPHS 200-bed provisions in X-ray and laboratories were found to be insufficient for practices prevailing in the community of this hospital.

The USPHS standards were meant for communities with meager hospital facilities where medical culture is, therefore, relatively low. However it is the author's practice always to begin planning the small hospital with USPHS standards, making departures only where conditions peculiar to a locality indicate the desirability of doing so.



THIRD FLOOR

The interns are to be housed in a small penthouse story (not shown). The bed capacity, inclusive of pediatric bassinets, is 109. The cubage is 961,334, or 8820 cu. ft. per bed

RADIANT PANEL HEATING WITH WARM AIR

House of Tyler S. Rogers, Toledo, Ohio

Russell B. Johns, Builder

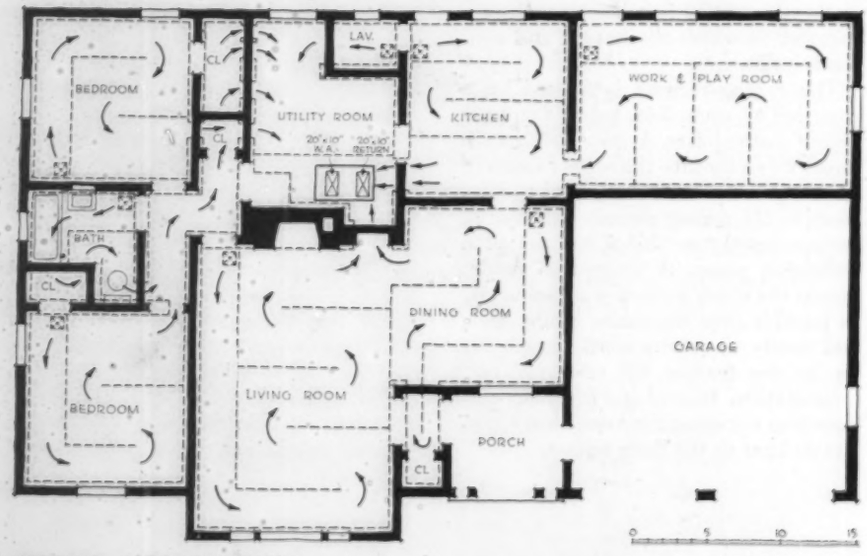
This is one of the first houses to test, under normal living conditions, a radiant panel heating system designed to maintain temperature comfort by responding quickly and automatically to changes in outside temperature. Warm air was chosen as the heating medium because its temperature and rate of flow can be altered in a minimum of time as called for by the thermostat. The temperature of the radiating ceiling can thus be changed much more quickly than is possible with a heavy-mass radiant panel such as a concrete floor. Using the entire ceiling of the house as the radiating panel also permits a greater range of surface temperatures without discomfort than is possible with a radiant floor. The entire ceiling is in effect a plenum chamber in which the heated and confined air flows.

This ceiling plenum is formed by a hung ceiling some 4 in. below the main ceiling-on-the-joists. A gas-fired furnace forces warm air into the supply ducts in the attic area. These ducts lead to inlet boots in the ceiling plenum chamber at various points as shown on the plan (following page). A system of baffles directs the warm air to flow as uniformly as possible over the entire ceiling area, and finally to outlets which return the air to the furnace for reheating and recirculation. Heated air from the furnace does not enter the rooms, but transfers its heat to the hung ceiling.

Heat is thus radiated downward from the warmed surface of the suspended metal-lath-and-plaster ceiling. The temperature differential between floor and ceiling remains constantly within the comfort zone with a single setting of the thermostat, irrespective of outside weather conditions.

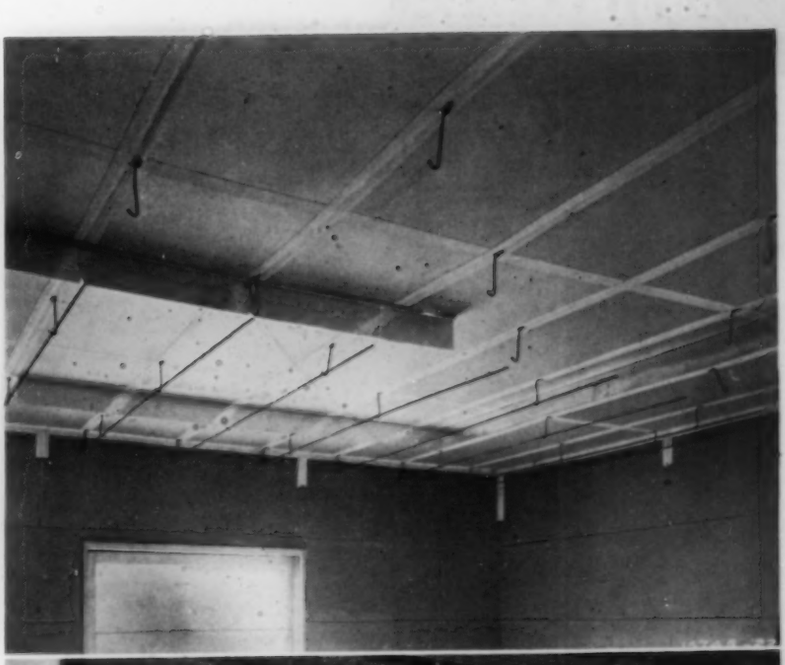
The house is thoroughly insulated with Fiberglas and the window glazing is Thermopane. Insulation board, with sealed joints forms the normal ceiling above the hung ceiling. The concrete slab floor is insulated from the foundation wall by a 1 in. Fiberglas backing board. Heating unit is rated at 125,000 Btu and a ⅓ hp fan provides the necessary air circulation.

Tom O'Reilly Photo



FLOOR PLAN & CEILING PANEL PLAN

Plan at left shows by dotted lines the scheme of baffles built within the hung ceiling. Arrows indicate direction of air flow over room areas and into the outlets, which return the air to the furnace unit for reheating and recirculation. Closets, cabinets, and the top of some partition walls are dropped away from the structural ceiling to permit free passage of air within the ceiling. Shown above and below are views of the panel-heated rooms



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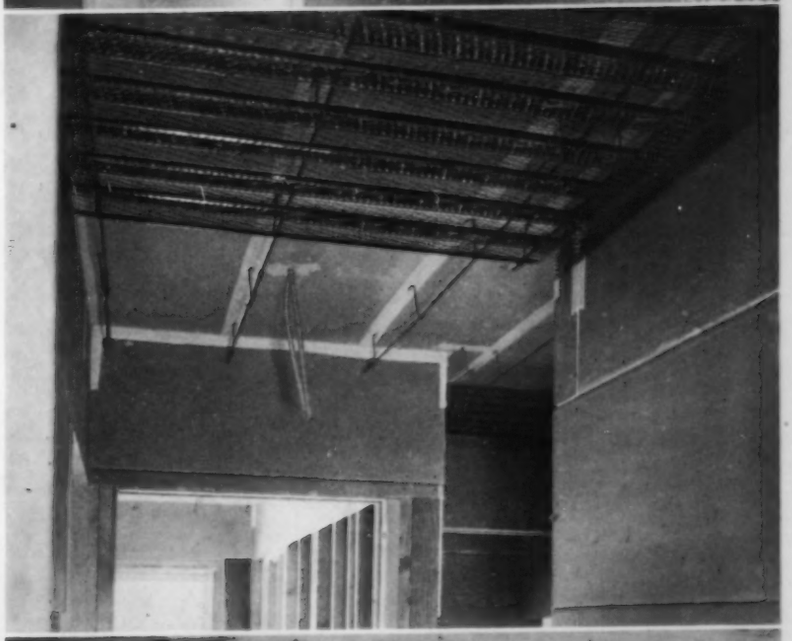

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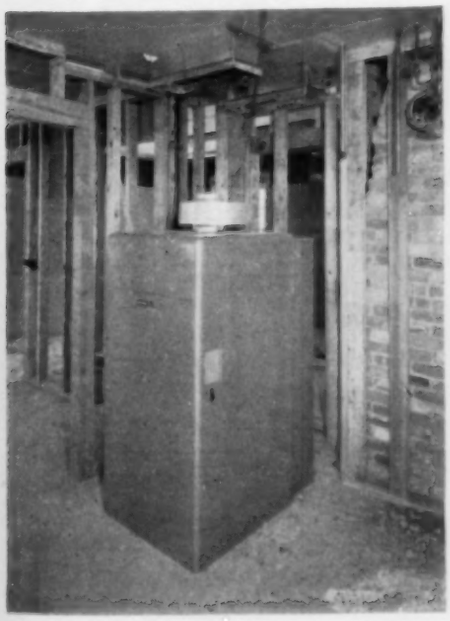
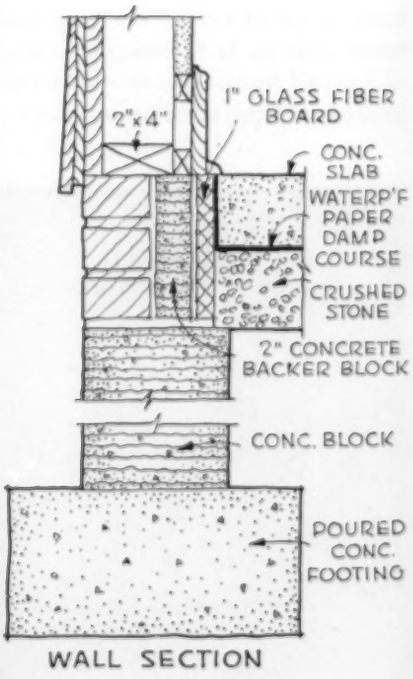
3

Steps in installing the hung ceiling: **(1)** *Hooks are attached to the true ceiling-joists to carry cross ties for metal lath. Notched sheet-metal baffles are also hung from the hooks to control direction of flow of warm air within the ceiling.* **(2)** *Metal lath in position, before application of scratch and finish coats of plaster.* **(3)** *View of attic shows insulated supply ducts that connect via warm-air inlet boots to the ceiling panels below. Insulation board sealed with strips is used to form top of ceiling plenum. Uninsulated pipe at right is not a part of the heating system but an exhaust for kitchen fumes*

Below: gas-fired furnace which supplies the forced warm air. In the ceiling are the warm-air boot and the frame for the returning air outlet to be connected to the furnace



The Rogers house is carefully insulated to derive full benefit from the panel-heating system. Above, left: Fiberglas backing board, 1 in. thick, is applied to 2-in. concrete backer block below the floor sill. Left: a base for the floor slab consists of about 4 in. of tamped crushed stone. Below, left: a waterproof paper serves as a damp course between the crushed stone and the concrete slab. Below: detail of foundation and floor construction



WALL SECTION

X-RAY FACILITIES FOR THE GENERAL HOSPITAL*

By Fred J. Hodges, M.D.

THE first matter to be considered in designing an x-ray department for a hospital is the extent and character of radiological service which is contemplated. This will depend upon the type of hospital, whether general or specialized, and whether it is intended for the care of chronic or acute diseases. It will depend also upon bed capacity and the anticipated extent of out-patient activities.

It is wise to plan at the outset for expansion, and attention is called to the fact that patient loads in x-ray departments are still increasing in proportion to total patient-days and out-patient visits. The plans of the hospital administration regarding the professional services of its radiological division are extremely important. The ability and energy of the radiologist to be engaged, and the extent to which he intends to devote his time to activities within the hospital will have a profound effect upon the total work load of the division. With all of these factors in mind it becomes apparent that no simple equation can be applied to predetermine on the basis of bed capacity alone the extent of floor space required.

Space requirements do not vary directly with work load. Increased volume in nearly every case implies increased complexity of activities with the inclusion of highly specialized machines. Consequently considerably more space is required than would be needed if increased patient volume merely represented simple multiplication of a few relatively uncomplicated procedures.

For purposes of illustration, let us consider briefly the fundamental x-ray needs of three hospital types commonly found in this country:

50-Bed Hospital
Service . . . . . General
Nearest larger hospital . . . . . 100 miles
Radiologist . . . . . Part time

200-Bed Hospital
Service . . . . . General
Nearest medical center . . . . . 300 miles
Radiologist . . . . . Full time

500-Bed (or more) Hospital
Service . . . . . General and teaching
Radiologist . . Full-time specialized staff

50-BED GENERAL HOSPITAL

The 50-bed general hospital may expect a total yearly patient-visit load of approximately 2400 in its x-ray division; an average of eight patients or less for each working day. Services consist preponderantly of film examinations of the chest; about one-third to one-half of the total. Except in unusual cases there is no need of apparatus for x-ray therapy treatment. Such equipment is costly, requires expensively constructed quarters, and, more important, the skill and close attention of a radiologist particularly trained in this field. The few patients who might require x-ray therapy during the course of a year in a hospital of this size would be better served if they were referred to the nearest institution that is fully equipped and staffed. Radiation therapy can only be practiced effectively and safely in close cooperation with professional skill and physical facilities of the highest order in the fields of surgery and pathology.

Diagnostic equipment of low current capacity and obtainable at moderate initial cost is needed to provide for the relatively simple demands made upon an x-ray laboratory in a hospital of this size. Remarkably good results can be obtained with a 100 M.A. machine. An auxiliary instrument of the truly portable type can be purchased at low cost for use with patients who cannot be transported to the x-ray quarters, as well as for emergency work outside of the hospital. Equipment costs rise steeply when highly specialized features are added. It is much sounder planning to design and allocate space with an eye to possible future expansion than to over-equip at the outset.

Even the smallest x-ray department, however, must have an adequate and dependable electrical power supply, preferably derived from its own transformer by way of an oversize feeder line of sufficient cross-sectional area to insure against undue voltage drop.

Provision must be made for a photographic dark room equipped with film processing tanks in which the temperature of solutions can be maintained at or near 68° F.

The walls of the dark room, where unused film is stored, must contain a thin layer of sheet lead at least to the level of 7 ft. above the floor. Obviously leading is required only in those areas exposed to straight line radiation from all possible x-ray tube positions. The control unit of the x-ray machine must also be protected by some sort of leaded partition or screen. For situations in which x-rays are used for diagnostic purposes only a protective layer of lead $\frac{1}{16}$ in. thick is ample. Lead glass should be used in the window of the control booth. The U. S. Bureau of Standards supplies specifications for adequate protection against x-radiation.

The x-ray examining room, when used both for radiography and fluoroscopy, must be fitted with lightproof shutters and doors and with light controls for brilliant white and dim red or green illumination. Some procedures require hot and cold tap water, as well as convenient toilet facilities.

Over and above the technical activities to be housed in an x-ray division, provision must be made for: (1) the examination of finished films under proper conditions; (2) the orderly filing of film records; (3) the preparation of written reports; (4) the disrobing of patients; and (5) consultations.

The x-ray quarters of a 50-bed general hospital might well consist of three rooms and a toilet, as outlined in Table I. Location should provide easy access for bed patients and patients who come in from the outside for x-ray service.

200-BED GENERAL HOSPITAL

A 200-bed general hospital must make far greater space provisions for its x-ray activities. One may expect its x-ray work load to reach a total of 10,000 to 12,000 patient-visits annually, accommodating something like 40 patients each working day, some ten of whom will be coming for radiation therapy. A hospital of this size will have on its medical staff representatives of many specialties, each of whom will expect correspondingly specialized services of the radiological group. The number of patients to be examined fluoroscopically

* Presented by Dr. Hodges of the Department of Roentgenology, University of Michigan, before the Ann Arbor Conference on Hospital Planning, April 5, 1947

TABLE I — X-Ray Facilities for 50-Bed General Hospital

X-ray examining room (including dressing room and control booth)	10 x 14
Photographic dark room (with lightproof door or labyrinth)	6 x 8
Combination film-viewing room and office	8 x 10
Toilet room of moderate size accessible to examining room	
Approximate total floor space	300 sq. ft.

will require that separate facilities be provided for such work and the expected volume of urological examinations will call for x-ray equipment in at least one cystoscopic room.

The routine chest x-ray examination of all patients upon admission is a sound and valuable service for a hospital of this size, either by means of miniature film equipment located near the registration desk or by adding necessary items of apparatus to machines in the main x-ray department. Also, there is a legitimate and very considerable demand for bedside examination of patients with mobile x-ray equipment in a 200-bed institution. Sometimes this apparatus, mounted on a wheeled truck, is needed in the operating rooms.

The extent to which specialized procedures are required will depend upon the abilities, interests, and activities of the various members of the medical staff. No categorical listing of the services for which provision must be made would hold for all hospitals of this size.

The inclusion of radiation therapy facilities in a hospital at once presents problems to the architect. To install apparatus of higher voltage than 200,000 or 250,000 in a hospital of 200 beds is uncalled for unless there is assurance that the demand for radiation therapy will be heavy. The cost of machines above the 200,000 volt range is great, whereas the output paradoxically is reduced. All therapy installations require extensive leading of inside walls, the thickness of lead increasing with the voltage at which the tube is operated. Total floor loads may become very great, requiring advance reinforcing. Ordinarily a therapy machine designed for superficial treatment is needed in addition to the heavier duty unit.

The three-room x-ray suite of 300 sq. ft. area needed for a 50-bed hospital is entirely inadequate for a 200-bed institution, general requirements of which are outlined in Table II. Floor space for both therapy and diagnostic departments totals about 2000 sq. ft. On the basis of this estimate, multiplying a hospital's bed capacity by four calls for an almost seven-fold increase of floor space to be devoted to x-ray activities. This greater provision is well justified in view of the importance of the elaborate service rendered and the income-producing potentialities of the x-ray division. It is neither necessary nor wise, however, for hospitals of this size to install every conceivable x-ray instrument that is available. There are many extremely particularized applications of x-rays in medicine which are out of place in any institution other than a very large medical center in which teaching and research are carried on.

MEDICAL CENTER

A 500-bed (or more) hospital that is an integral part of a center of medical education requires a considerable increase in the way of equipment and space devoted to radiology. These requirements will not differ greatly when bed capacities vary as much as 300 to 400 because a considerable part of the x-ray plant owes its space requirements to teaching and investigative activities. At the University of Michigan, for example, medical radiology (exclusive of x-ray installations in engineering, physics, and the dental school) occupies some 20,000 sq. ft. Half of this space, located in one main unit three floors below the surgical operating rooms and one floor below the out-patient clinics, provides highly diversified clinical service to patients at the rate of 60,000 patient-visits per year; an average of 200 per working day distributed approximately five to one between the diagnostic and the therapy divisions. Comparing these figures with those quoted for a 50-bed general hospital, the bed capacity of 900 which is 18 times greater provides a corresponding increase in the clinical work load. Space requirements on the other hand have soared 33 times, entirely exclusive of an equal amount of space scattered about the hospital plant where various specialized activities, both clinical and research, are housed.

It is of the first importance to make ample provision for teaching activities in an institution connected with a medical school. Much of this, at both the undergraduate and the postgraduate levels, is done best in the midst of clinical activities. Requirements for conference rooms and film-viewing rooms for the general medical staff and their students are heavy. There must be provided a library containing, in addition to books and periodicals, catalogued collections of lantern slides and teaching films. Desk space and viewing equipment must be made available to the staff of radiologists in training. Dark room and business office requirements are extensive.

There are many sound reasons for maintaining centralization of radiological facilities as far as possible. Electrical power circuits are most efficient in serving x-ray equipment when the distance between the transformer bank and the main distribution panel is held to the minimum. Photographic processing on a large scale permits the installation of efficient equipment for mass production. A central point for the delivery of supplies common to all x-ray work saves many man-hours for the hospital stores division. One cashier through whom all financial transactions are cleared makes for an efficient arrangement, as does a central appointment and information desk.

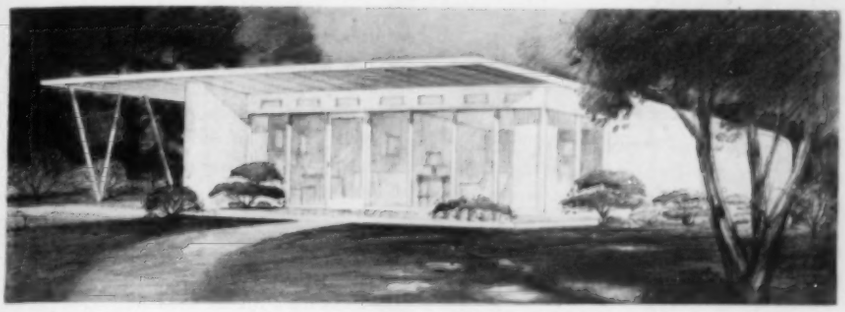
Only when certain specialized applications of radiology are developed to the point of great intimacy with some other medical activity that must be located elsewhere in the institution does it become practicable to establish outposts of the x-ray department.

TABLE II — X-Ray Facilities for 200-Bed General Hospital

Therapy Department	
Room for deep therapy machine and patient's couch	10 x 12
Room for superficial treatment machine	8 x 10
Control booths entirely outside of treatment rooms	6 x 8
Record office	6 x 10
Examining room	6 x 10
Consultation room	6 x 10
Two dressing rooms	8 x 5
Total approximate space for Therapy Dept.	470 sq. ft

Diagnostic Department	
Fluoroscopic room	10 x 14
General radiographic room containing accessory equipment	15 x 20
Two special service rooms for cystoscopy, and fracture, chest, or skull examinations	12 x 20
Photographic dark room	8 x 10
Film files and clerical office	15 x 20
Film viewing room	8 x 12
Radiologist's office	8 x 10
Also, toilet room, coat closet, 3 or 4 small dressing rooms, interior corridor space, patient's reception room, storage room	
Total approximate space for Diagnostic Dept.	1500 sq. ft.

PRODUCTS for Better Building



Aluminum is featured in design of small house tailored to assembly-line techniques

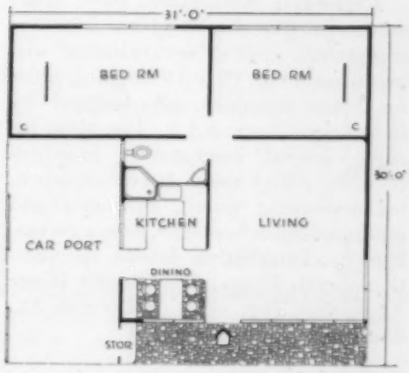
CALIFORNIA HOUSE — MASS-PRODUCED IN ALUMINUM

A new design for mass-produced houses, tailored to assembly-line techniques, has appeared on the West Coast. The Muntz House, designed by Jacque Fresco of Scientific Research Laboratories and marketed by Earl W. Muntz of Los Angeles, depends principally upon aluminum as a structural and finishing material.

The standard house shown here is a 4-room unit, consisting of two bedrooms, a living room, kitchen, dinette, bath, and car port. It covers 930 sq. ft. overall. There are 12 variations of the basic design with the same square footage of floor space.

Aluminum is used as the chief material because of its light weight, high strength-weight ratio, permanence, and ease of shop fabrication. Its light weight reduces shipping costs and permits the fabrication of larger sections in the factory, while extending the radius of profitable marketing. Factory-produced units for an entire house are said to weigh only a little more than 5000 lb.

Framing members and walls are erected on previously laid concrete foundations, poured into a standardized mold, around a network of previously assembled and set-in plumbing pipes and electrical conduits. Roof of the structure slopes down to an abrupt curve and then becomes the rear wall. This wall is securely anchored in the concrete foundation and braced by specially designed extrusions which are connected by patented lock joints. This roof and rear wall have lengthwise corrugations which act as stiffeners and at the same time provide drainage channels to the rear of the house. The two main longitudinal members which form the backbone of the structure also provide panels which grip the ceiling and wall panels. Design of the interior walls so as to converge at



the center line provides a trussing for the roof. The interior walls snap onto the wall girder extrusions by a patented lock. There are no nails, screws, or bolts in their construction.

Insulation is provided by the reflective nature of aluminum and by an inner lining of spun glass.

ELECTRIC PANEL HEATING

A new type of electric panel heating has been introduced in an experimental house in Knoxville, Tenn., employing ceiling heating panels of conductive rubber. Reversing nature, chemists have transformed rubber from an insulator to an electrical conductor by adding high percentages of finely ground carbon, the material used in dry cell batteries. During the war, conductive rubber was used in heating pads to de-ice propeller blades and wing guns of aircraft. The panels developed for ceiling heating are 4-ft. square, consisting of conductive rubber sandwiched between two thin layers of plastic. Electricity is conducted to the edge of the panels by copper wire, but there are no wires within the heating area. Ceilings may be papered or painted in the usual way. Space above the ceiling is insulated with an 8-in. thickness of rock wool. On the basis of Knoxville's low power rates, it is estimated that a small house can be heated at a cost of $72.00 a year, if well insulated. The experimental house, built by the Fonde Construction Co. of Knoxville, consumed 1960 kilowatt hours of electricity in one test period lasting 24 days in March. U. S. Rubber Co., Rockefeller Center, New York, N. Y.

SMOOTH-FACED PLYWOOD

Plywood is now being manufactured in limited quantities with an outer surface that reportedly is smooth, durable, and free of grain pattern. Known as *Welchboard*, this wallboard is of usual plywood construction except for its surface layer which consists of minute wood fibers from clean wood waste, bonded by a waterproof resin. The result is said to be an improved surface for the application of fine finishes; tests indicating that the surface takes the place of two to four base paint coats. Basic panel size is 4 ft. by 8 ft., and $\frac{3}{8}$ in. thick, with an added $\frac{1}{16}$-in. skin of bonded wood fibers. Douglas Fir Plywood Association, Dept. AR, Tacoma 2, Wash.

RANGE CONNECTION

Flexible bronze connections are available for gas ranges, which permit the range to be moved back flush with the wall. Flexible *Rex-Weld* is said also to save on installation costs, since pipe cutting and threading is unnecessary. Chicago Metal Hose Corporation, Maywood, Ill.

AIR-COOLER

Luminaire looks like a standing indirect lamp, and is, but incorporated in its enlarged base is an air-conditioning unit reported to be capable of cooling up to 450 sq. ft. of normal floor area. Installation requires only tying it in with convenient water and drain connections, and plugging into existing electrical outlets. The insulated dome contains air inlet and outlet louvers. It is planned to include a germicidal lamp as optional equipment so that the unit may act as a combination air-conditioner, lighting unit, and air sterilizer. Parlong Air Conditioning Corp., Washington, D. C.

ELECTRIC PLUG-IN STRIP

A $\frac{7}{8}$-in. thick steel molding can be clipped on the top of wall baseboards to provide electrical outlets every 18 in. along the wall. All room current is run through this plug-in strip, eliminating wiring behind walls and the over-loaded outlets of a conventional type. The plug-in strip can be located wherever most convenient: such as along chair rails at table height or along the back wall of kitchen work space, providing convenient outlets for the many types of

(*Continued on page 166*)

MANUFACTURERS' LITERATURE

AIR CONDITIONING

American Air Filters in Industry: Electronic Dust Precipitation, Air Filtration. Discussion of various types of industrial dust problems and typical applications of AAF air filters to such problems. Includes a chart of size and characteristics of air-borne solids. Separate sections deal with atmospheric dust and filtered air for industrial air conditioning, industrial ventilation, drying operations, product finishing, control of bacteria and mold spores, cooling electrical equipment, engines and compressors and miscellaneous industrial applications. 24 pp., illus. American Air Filter Co., 215 Central Ave., Louisville 8, Ky.*

New Industrial Dimensions. Presentation of some of the major uses of industrial refrigeration and air conditioning, and how the problems of each application may be most efficiently and economically solved. Diagrams of heating and refrigeration systems. Description of various types of air conditioning and cooling. 32 pp., illus. Air Conditioning Dept., General Electric Co., 5 Lawrence St., Bloomfield, N. J.*

Sirocco Humidifiers, Dehumidifiers and Air Washers for Air Conditioning. Catalog of a line of air conditioning equipment, containing description of the Sirocco method of air washing and of humidity control systems and air washing without humidifying. Specifications, dimensions and general data tables, psychrometric chart. 34 pp., illus. American Blower Corp., Detroit, Mich.*

GLASS BLOCK

(1) Ideas for Brighter Homes with Insulux Glass Block; (2) Ideas for Commercial Applications; (3) Owens-Illinois Insulux Glass Block 1947 General Catalog. Three new booklets on glass block and their use. Construction information and general data given in (1), together with a number of plans for the use of glass block in the home, and full installation details. Typical commercial applications are shown in (2), and design information is given. The general catalog (3) shows applications in home, hospital, store and factory; advantages claimed; designs, sizes and description of the full line of glass block; construction details, basic specifications, technical data. 16, 16 and 28 pp., illus. Insulux Products Division, Owens-Illinois Glass Co., Toledo, Ohio.*

* Other product information in Sweet's File, 1947.

GLUE IN PREFABS

Glued Prefabricated Houses. Basic information on the use of glue in prefab operations. Lists the many uses of glue in prefab construction, describes the latest methods of applying the bonding agents and the techniques for applying pressure and speeding the curing of the adhesives. Includes a chart listing standard conditions for best results with casein glues. 8 pp., illus. Casein Co. of America, 350 Madison Ave., New York 17, N. Y.

LAUNDRIES

Architects Handbook. Basic information on planning the home laundry: equipment, built-in conveniences, wiring, plumbing. Plus 11 detailed plans for home laundries, all designed by L. Morgan Yost, A.I.A. The plans include several combination laundries (laundry-utility room, laundry-kitchen, laundry-sewing room), basement and minimum-space laundries, even a garage-laundry. Installation details, specification sheets. 40 pp., illus. Bendix Home Appliances, Inc., 3300 W. Sample St., South Bend 24, Ind.*

METAL TREATING

Bonderizing: A Parker Process that Holds Paint to Metal and Resists Corrosion. Complete description of a treatment for metals designed to preserve fine finishes by anchoring the paint and retarding corrosion. Methods of application are described and illustrated, results of various tests are reported, and typical uses are shown. Suggested architectural uses include hardware, steel windows, bathroom and kitchen cabinets, steel partitions and screen frames, air conditioning equipment. List of regular users included. 44 pp., illus. Parker Rust Proof Co., 2177 E. Milwaukee, Detroit 11, Mich. *Copies for manufacturers only.*

METALS

Finishes for Aluminum: Section I, Types of Finishes; Section II, Standard Processes. The first of these two volumes discusses cleaning treatments, mechanical surface finishes, chemical surface finishes, electrolytic oxide treatments, electroplated coatings, paint application methods, paint coating, ceramic coatings, special finishes such as silk screen and sprayed metal finishes. Second section gives shop data on materials, equipment, solution preparation, procedure and control for more than 30 of the most widely used finishing processes. 108 pp., illus., and 120 pp. Reynolds Metals Co., Dept. 27, 2500 S. 3rd St., Louisville 1, Ky.* *$2.00.*

PANELS, MOLDINGS

Marlite for the Finest in Low-Cost Luxury Interiors. Description of Marlite wall and ceiling panels, the three patterns available, advantages claimed; chart of colors and finishes; table of uses. Installation details, general specifications. Catalog of moldings. 8 pp., illus. Marsh Wall Products, Inc., Dover, Ohio.*

PARTITIONS

Martin-Parry Metlwal. Descriptive bulletin on a line of movable steel partitions and interior paneling. Shows cutaway sections, gives complete specifications, installation details, typical installations. Products include partitions of various heights, glazed and standard railings, accessories such as sliding windows, grills, doors. 16 pp., illus. Martin-Parry Corp., Fisher Bldg., Detroit 2, Mich.*

REGULATORS

Temperature Regulators and Controllers (Bulletin 464). Engineering, operating and maintenance data; construction details of each class or type of regulator or control; sizing and capacity tables to guide the selection of the proper unit for specific applications; instructions for installing, operating, dismantling, cleaning and assembling. Both self-contained regulators and external-pilot-operated controllers are included. 24 pp., illus. Leslie Co., 57 Delafield Ave., Lyndhurst, N. J.

ROOFING

Built-up Roofs Applied Cold! Description of Flintkote Cold Process roofing, the materials used, typical installations, advantages claimed, specifications. 14 pp., illus. The Flintkote Co., Building Materials Division, 30 Rockefeller Plaza, New York 20, N. Y.*

STEEL

Allegheny Metal Stainless Steels: Base Prices and Classifications of Extras (Bulletin A). New base prices and extras applying to Allegheny Metal Stainless Steel and related products — sheet extras, plates (solid) and plates (clad) extras, bars, wires, angles, strip and flat wire extras, seamless tubing, 6 per cent chrome. Allegheny Ludlum Steel Corp., Brackenridge, Penn.*

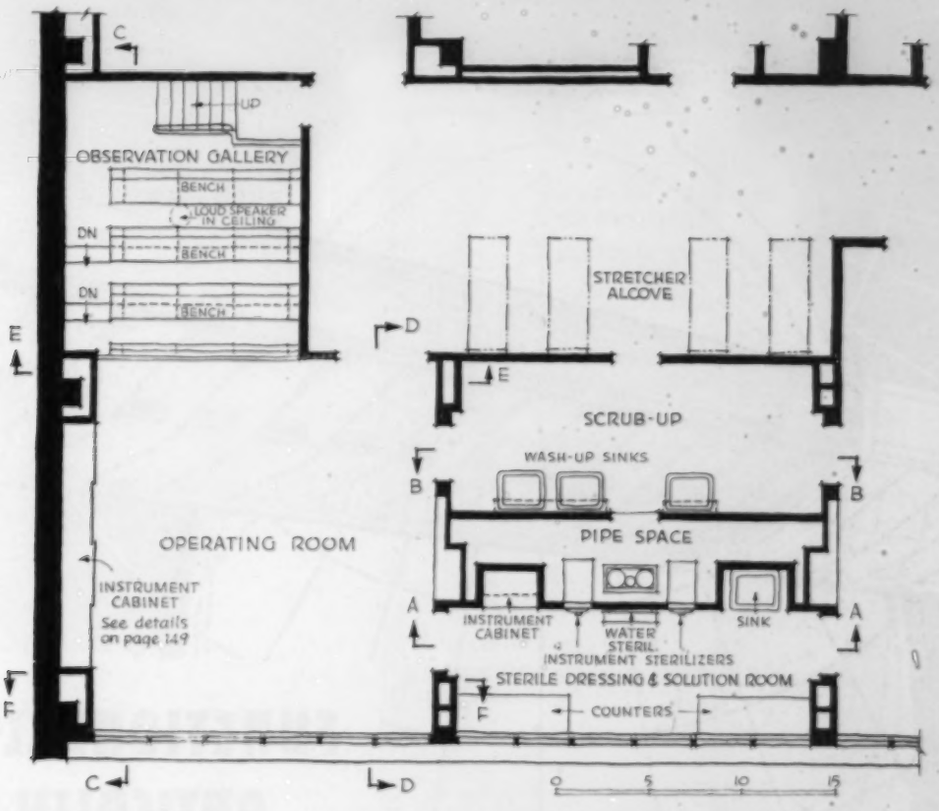
STORE FRONTS

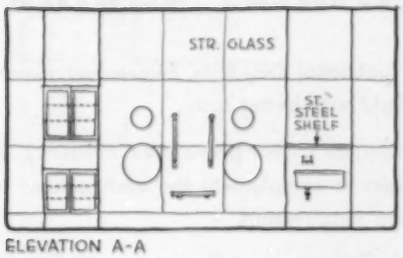
People Buy by Eye. A series of architect-designed store fronts (the majority by Ketchum, Giná and Sharp and the

(*Continued on page 176*)

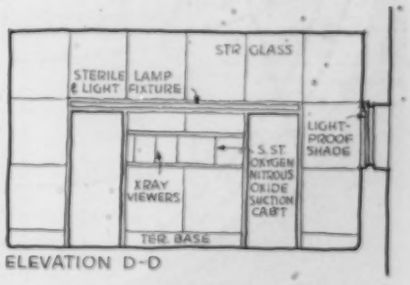
HOSPITAL OPERATING ROOM DETAILS

Veterans Administration Hospital, Fort Hamilton, N. Y. Skidmore, Owings & Merrill, Architect-Engineers

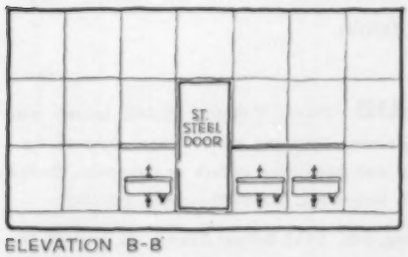




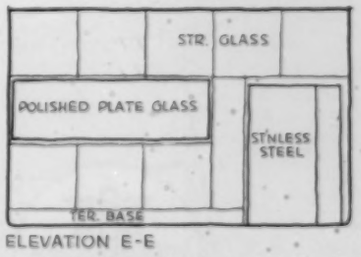
ELEVATION A-A



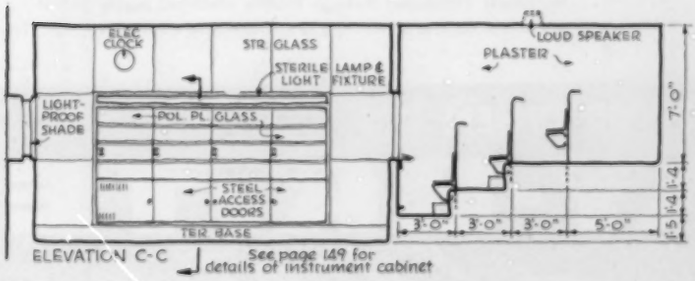
ELEVATION D-D



ELEVATION B-B

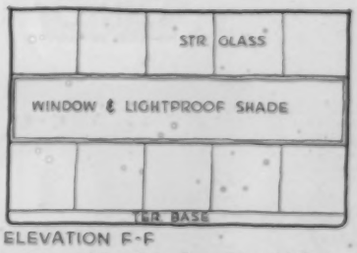


ELEVATION E-E



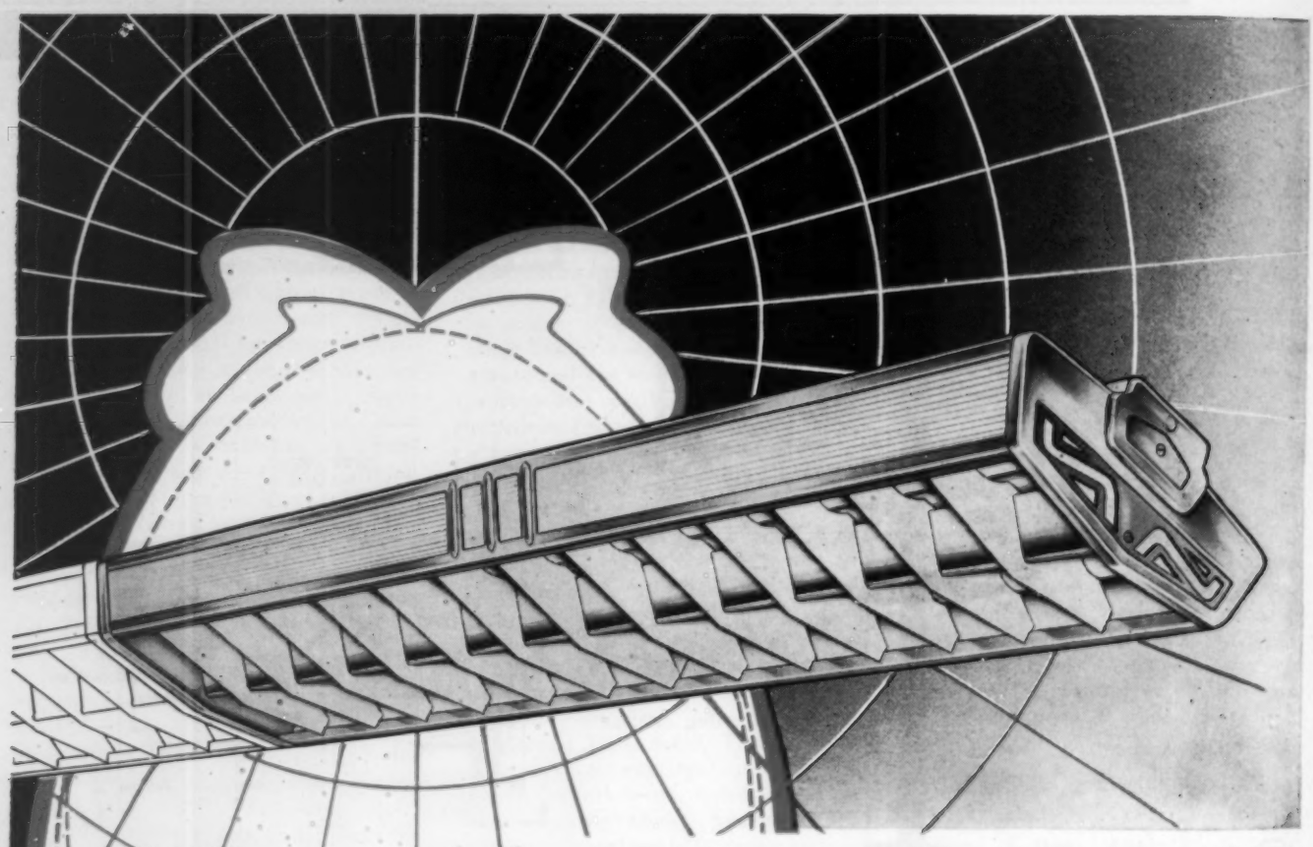
ELEVATION C-C

See page 149 for details of instrument cabinet



ELEVATION F-F

(Continued on page 149)



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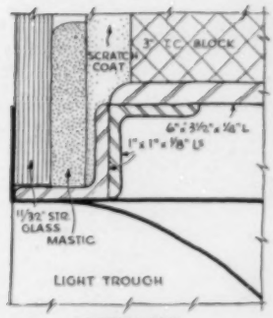
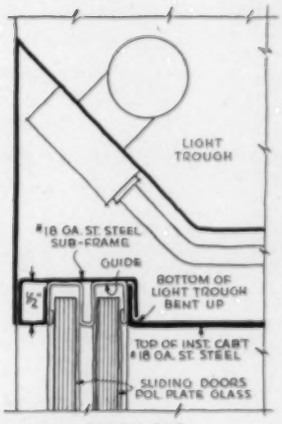
HOSPITAL OPERATING ROOM DETAILS (Continued from page 147)

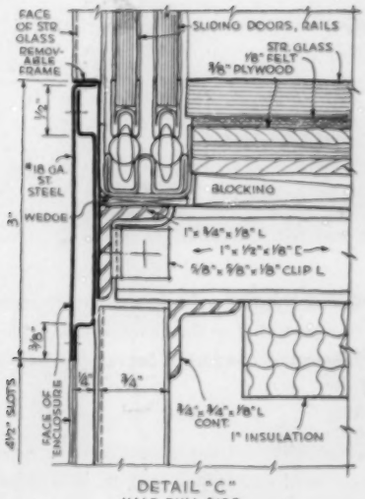
Veterans Administration Hospital, Fort Hamilton, N. Y. Skidmore, Owings & Merrill, Architect-Engineers



DETAIL "A"
HALF FULL SIZE


LIGHT TROUGH
#18 GA. ST. STEEL SUB-FRAME
GUIDE
½"
BOTTOM OF LIGHT TROUGH BENT UP
TOP OF INST. CABT #18 GA. ST. STEEL
SLIDING DOORS POL. PLATE GLASS

DETAIL "B"
HALF FULL SIZE



DETAIL "C"
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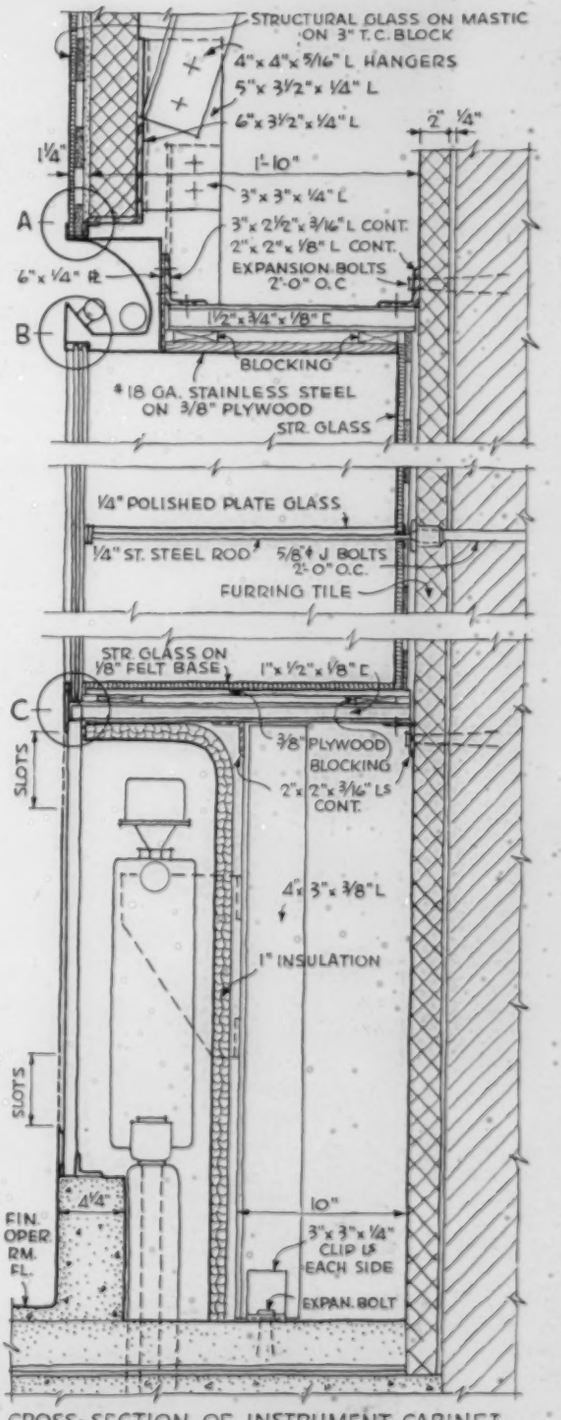

CROSS-SECTION OF INSTRUMENT CABINET
(Page 147)

0 6" 1' 2'

"Profits up...workers' morale a

MODERN INSIDE as well as out, the attractive jewelry store of Mr. Henry Webel at Ridgewood, Long Island, offers customers the year-round comfort of Servel *All-Year* Gas Air Conditioning.

CUSTOMERS find this attractive shop a welcome refuge from summer heat and winter cold, thanks to the comfortable indoor climate provided through every season by Servel *All-Year* Gas Air Conditioning.

an efficiency higher

...since installing the Servel

All-Year Gas Air Conditioner!"

That's what typical commercial users say about this new Servel equipment

Yes, you can specify Servel *All-Year* Gas Air Conditioning for your clients' stores, offices, laboratories and other commercial buildings with complete confidence that this equipment will more than justify its cost.

In fact, typical comments received from commercial and professional users the country over indicate you will be safe in telling your clients that the Servel *All-Year* Gas Air Conditioner can actually *pay for itself* in a very few years! Everywhere users report increased summer profits, greater store traffic, less sick time lost from work, higher employee morale and efficiency—all advantages that pay off in dollars and cents.

A typical experience with Servel *All-Year* Gas Air Conditioning is that of Mr. Henry Webel, of 57-36 Myrtle Avenue, Ridgewood, Long Island. He says:

"I've been more than satisfied with the clean, comfortable indoor climate the Servel Conditioner has provided the year round in my jewelry store. The Servel unit has proved efficient, economical, and simple to operate. Best of all, it has increased my summer business—and hence my profits—to the point where the Conditioner will have actually paid for itself in a very few years!"

Hundreds of similarly enthusiastic letters are in our files from commercial as well as residential users from coast to coast.

There's a simple reason for the striking popularity of Servel *All-Year* Gas Air Conditioning in commercial installations. This unique equipment provides *all* the functions of year-round air conditioning. And does it with *a single unit!* In summer, the Servel unit cools and dehumidifies the air. In winter, it heats the air and adds just the right amount of humidity for comfort. Year round, Servel circulates filter-cleaned air, without drafts, and always at a comfortable temperature and humidity.

If you'd like more information on how you can bring the year-round comfort—and the money-making benefits—of Servel *All-Year* Gas Air Conditioning to your commercial and professional clients, get in touch today with your local Gas Company. Or write direct to Servel, Inc., 8706 Morton Avenue, Evansville 20, Indiana.

TRIED . . . PROVED . . . SUCCESSFUL . . . *From Boston to San Diego . . . From Bismarck to Miami . . .* The Servel *All-Year* Gas Air Conditioner is operating in hundreds of installations from coast to coast. Some have been running for more than four years. The equipment is tried, tested . . . and *approved* by users everywhere.

Servel

All-Year GAS AIR CONDITIONER

TOP VIEW Showing coverage.

SIDE VIEW—Showing moving streams of heated air sweeping slowly around complete circle.

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THE Wing Revolving Unit Heater differs from every other unit heater on the market in its unique method of distributing the heated air. Instead of projecting the air in one or more streams in fixed directions, the slowly revolving discharge outlets of the Wing Revolving Heater distribute the heated air in *constantly changing* directions, covering the working area completely, uniformly and with a healthful, refreshing effect.

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THE RECORD REPORTS

(*Continued from page 16*)

Architects, a member of the Seattle Planning Commission and the Eugene Planning Commission, and worked with the U. S. Housing Bureau at Bremerton.

CLAUDE J. STEFFES

Claude Joseph Steffes, a partner in the firm of Allen, Koehler, Steffes, Architects, of Appleton, Wisc., died on April 6th following a brief illness. He was 50.

A native of Wisconsin, Mr. Steffes was associated for 15 years with the architectural firm of Zimmerman, Saxe and MacBride in Chicago. He was a member of the American Institute of Architects and the State Association of Wisconsin Architects.

AT THE COLLEGES

Plan for Westport

In response to a plea made by citizens of Westport, Conn., the Section on City Planning of Yale University's Department of Architecture is now preparing a plan for the Town of Westport in an effort to solve problems common to many communities throughout the nation.

Preliminary sketches were presented to the Westport townspeople on May 7th. Keynote of the proposals was the preservation of the rural character of the town while insuring against future growth of an undesirable nature. Included were plans for a new shopping center, a community and civic center, zoning, and industry and recreational facilities.

The Yale group is taking the Westport problem as a term project, with more than 50 undergraduate professional students and five graduate students collaborating on research and in the submission of the plan. The work is under the direct supervision of Prof. Christopher Tunnard, chairman of the Section of City Planning. Graduate students in the Law School and in the Department of Sociology are cooperating on the project.

Residential Planning

From the drafting boards of students in Columbia University's School of Architecture have come plans to transform Adolph Zukor's 800-acre estate in New City, Rockland County, N. Y., into a model residential community of 500 private homes. It will be known as Rockingham Park.

In general the plans propose the construction of individual residences on lots varying from ⅓ to 2 acres. A portion of

(*Continued on page 154*)

how can I best use this x-ray space?

Planning the hospital x-ray department is one of the toughest problems an architect can encounter; it requires a lot of highly *specialized* technical background and experience. Feel free to call upon us for help when your next project comes up . . . you'll enlist the cooperation of an organization with fifty years of "know-how" in the design of fine *x-ray apparatus* and efficient *working layouts* to complement it.

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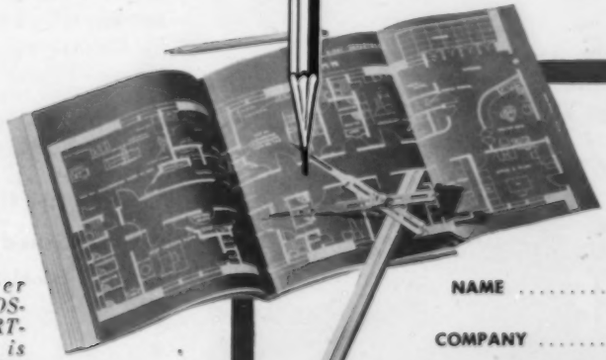

The 78-page Picker "HANDBOOK FOR HOSPITAL X-RAY DEPARTMENT PLANNING" is full of helpful information ...contains typical layouts, space requirements, equipment description, wiring specifications, similar technical material.

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Housing Project: Glendale, Wisconsin

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The color overtones of an expertly dyed fabric are brought out best when the material to be dyed is white. For the same reason, a matrix of Atlas White Cement sets off better the color values of pigments and aggregates in Terrazzo, Stucco, Cement Paint and Architectural Concrete Slabs. Such a matrix has the uniform clarity to complement the desired color, whether in contrast or blend.

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For further information, write the Atlas White Bureau, Universal Atlas Cement Company (United States Steel Corporation Subsidiary), Chrysler Building, New York 17, N. Y.

AR-C-18

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Sunday Evenings—ABC Network

THE RECORD REPORTS

(*Continued from page 152*)

the south shore of a 25-acre lake on the property has been set aside as a recreational area, and the facilities of the existing golf and country club also on the property will be considerably expanded.

In the first six months of the 2½-year project 60 scale models and plans have been constructed by the students. The work was started by Dean Leopold Arnaud of the School of Architecture, and is under the supervision of J. Marshall Miller, director of the planning and housing division of the School.

Awards Made

The University of Michigan College of Architecture and Design has announced the award of the $1000 George G. Booth Traveling Fellowship to Linn C. Smith, Class of 1942. Charles W. Pearman, 1947, placed second; John H. Bickel, 1947, third; and James H. Blair, Feb., 1947, fourth.

Outside Lectures

The School of Architecture and Allied Arts of the University of Oregon has inaugurated a series of outside lecture units in subjects related to architecture and design. The initial conference, held in April, was on city planning, and was led by Charles Bennett, city planner for Los Angeles. Two sessions were devoted to student problems, and a third was open to the public.

Building Program

The recently established office of the A. & M. System Architect, representing the Agricultural and Mechanical College of Texas, College Station, Texas, and its three branch colleges, has begun plans on an $8,000,000 building program.

Appointments

Arthur F. Deam, formerly with the University of Illinois, and now connected with the Department of Architecture, School of Fine Arts, University of Pennsylvania, has been appointed patron of the T Square Club of Philadelphia.

Jan Ruhtenberg, A.I.A., has been appointed instructor in design for the summer session of the School of Architecture at the University of Denver.

Booklet Issued

A new booklet, "Moisture Condensation" (F6.2), recently issued by the University of Illinois Small Homes Council, combines the efforts of two universities. The information was supplied by Prof. Frank B. Rowley, director of the University of Minnesota Engineering Experiment Station.

(*Continued on page 156*)

The one big difference between small homes of 1940 and the small homes of 1947 is in the area devoted to windows.

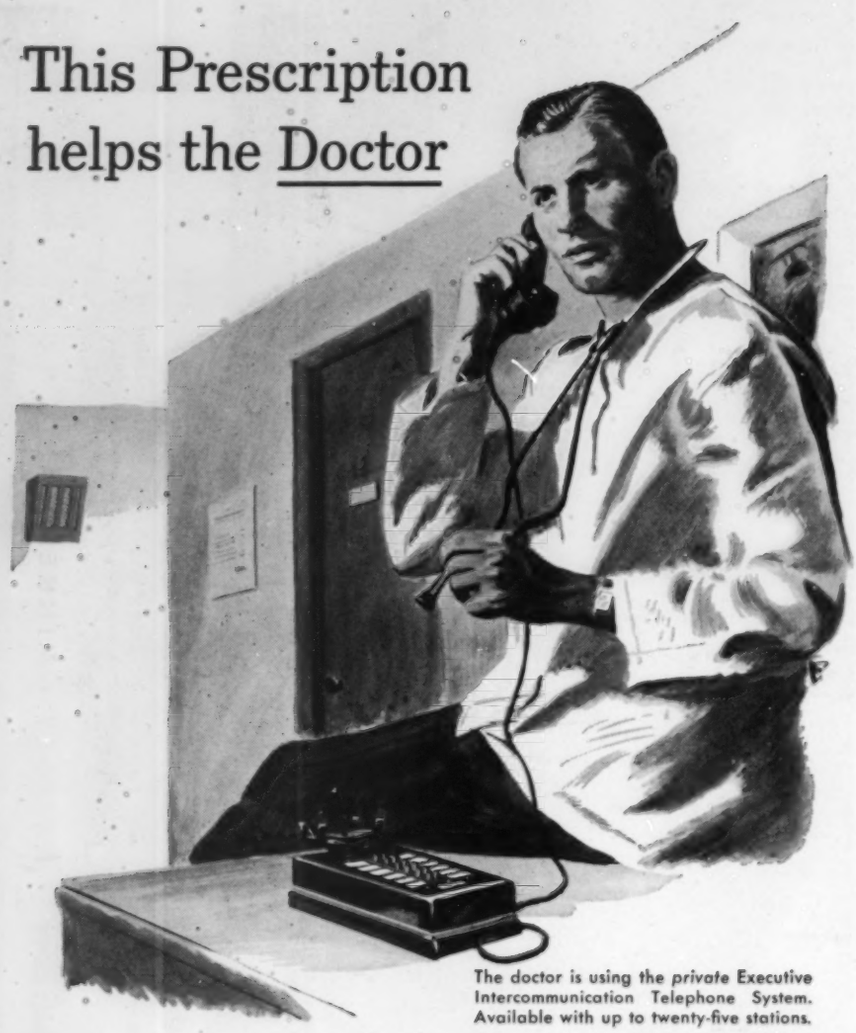
Homes like this two-bedroom job have become the rule, rather than the exception.

Here Andersen WINDOWALLS help achieve the feeling of size in the living room . . . and, as usual, they serve both as windows and as walls.

Andersen Horizontal Gliding Window Units combined in a corner installation. Home designed by St. Paul chapter, American Institute of Architects.

Andersen Corporation · BAYPORT · MINNESOTA

This Prescription helps the Doctor



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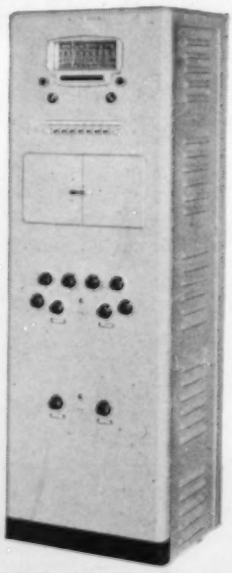


THE HEART OF HOSPITAL EFFICIENCY — Stromberg-Carlson Standard Sound System Model 750. Compact cabinet contains AM-FM radio receiver, record player, all controls and amplifiers.

STROMBERG-CARLSON

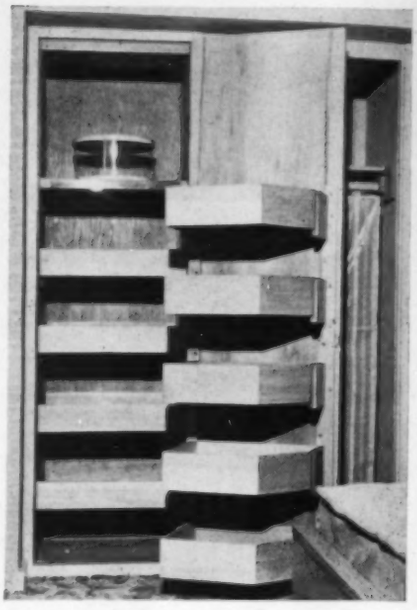
NATURAL-VOICE SOUND SYSTEMS

THE RECORD REPORTS

(*Continued from page 154*)

The bulletin discusses the problem and cause of moisture condensation, suggests cures, and explains methods of avoiding such condensation by insulation, vapor barriers and ventilation.

Copies of the new booklet may be obtained free of charge from the Small Homes Council, Mumford House, University of Illinois, Urbana, Ill.



As seen at New York's recent Home Show: intermeshing trays for storage

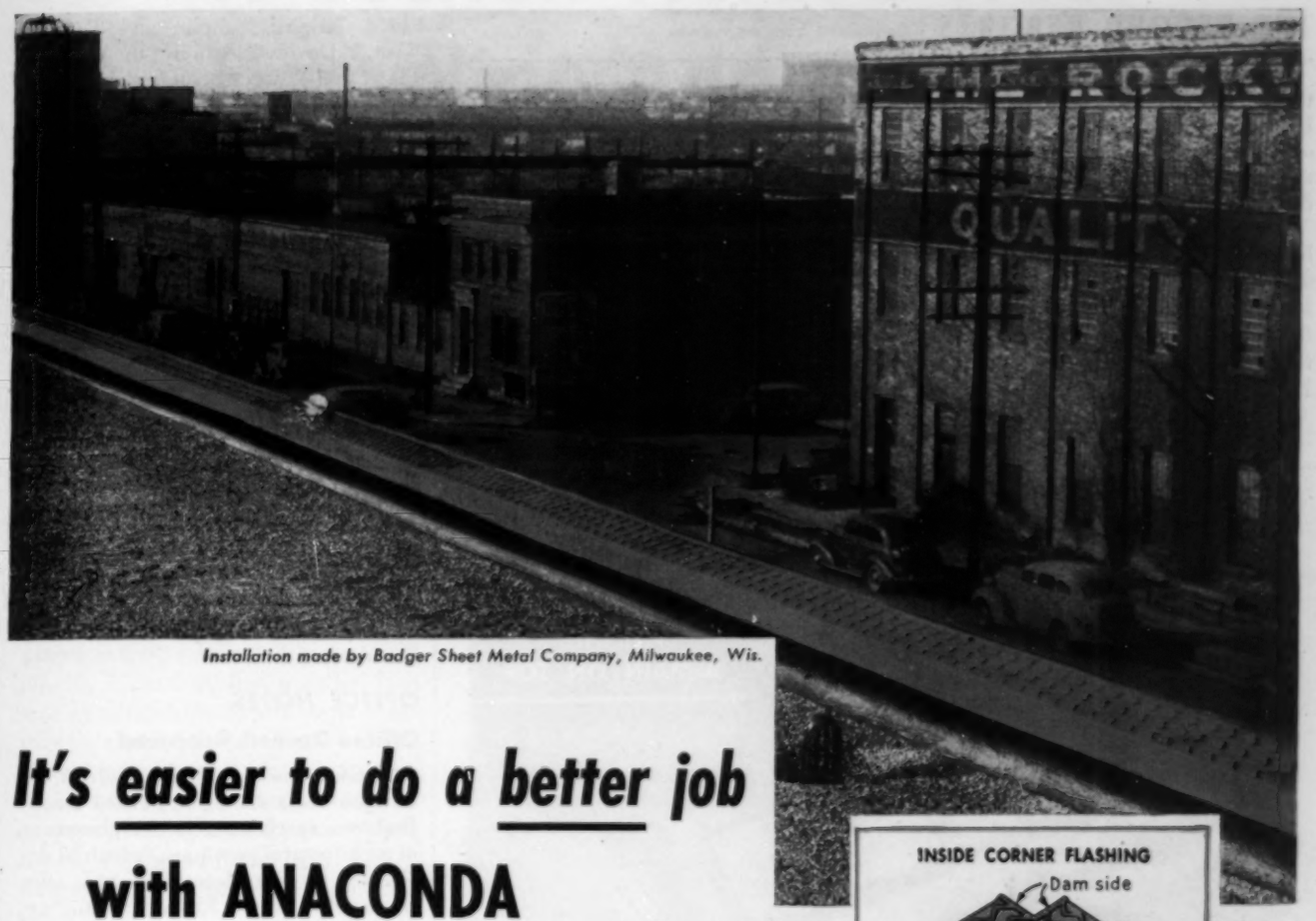
STORAGE IDEA

Displayed at the Metropolitan Home Show in New York in April was a new storage idea designed by Carl Schlie, 31–53 34th St., Long Island City 3, N. Y. Consisting of a series of intermeshing, removable trays attached half to the door and half to the back of a cabinet or closet, the unit is adaptable not only for clothes storage but for tools, small parts, samples, stock, instruments and the like. The entire content of the closet is instantly visible when the door is opened. The unit is not yet in production.

EUROPEAN TOUR

World Studytours, 417 W. 121st St., New York 27, N. Y., has announced a six to seven week study tour on European Reconstruction and Community Planning for this coming August and early September. Intended primarily for specialists in the planning, architectural and engineering fields, the tour will provide an intensive study on the spot of devastation and changes resulting from the war, and of specific programs and reconstruction work initiated to meet

(*Continued on page 158*)



Installation made by Badger Sheet Metal Company, Milwaukee, Wis.

It's easier to do a better job with ANACONDA Through-Wall Flashing

INSIDE CORNER FLASHING
Dam side
Counter flashing
Standard inside corner flashing units. Dam on inside, drains out.
OUTSIDE CORNER FLASHING
Dam side
Standard outside corner flashing units. Dam on outside, drains in.

THIS UNUSUAL VIEW shows a long run of Anaconda Through-Wall Flashing . . . *the flashing that drains itself dry* . . . just as the sheet metal contractor left it and before the masons followed with coping.

Here you can plainly see the outer dam that will cause the seepage of water from the coping to drain toward the roof, and the corrugations that provide a strong bond with the mortar. These zig-zag ridges prevent lateral movement and insure water-tight joints when sections of the flashing are nested endwise. Here, too, you can see how the flat selvage makes a neat bend when formed as a counter flashing.

These die-stamped sections and corner units insure controlled drainage and make the work of the sheet metal man easier. Anaconda Copper insures long life. For detailed information, write for Publication C-3.

4700

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these. Planner and leader of the tour is Hermann H. Field, A.I.A., director of research and planning in the New York architectural firm of Antonin Raymond & L. L. Rado.

The group is scheduled to visit England, Czechoslovakia, Poland, and probably Russia, with stopovers in transit in France and Germany. For further information address World Studytours at the above address, or Mr. Field at 101 Park Ave., New York 17.

AT THE MUSEUMS

Currently on view at the Museum of the City of New York is an exhibition called "The Battle with the Slum, 1887–1897," consisting of 50 photographic prints made by Alexander Alland from the original negatives by Jacob A. Riis. The exhibit closes September 15th.

On view through June 15th at the Museum of Modern Art, New York City, is an exhibition entitled "Frank Lloyd Wright: Taliesin and Taliesin West." Devoted entirely to Wright's winter and summer homes, it consists of 16 large kodachromes and two architect's plans. The photographs are by Ezra Stoller, the plans by Mr. Wright.

APPOINTMENTS

Appointment of John F. Toedtman as Housing Consultant has been announced by the War Department. Mr. Toedtman is serving in Germany, with headquarters in Bremen. A native of Ohio, he was director of the National Committee on Housing from 1943 until he sailed for Europe late in March.

The H. K. Ferguson Company, industrial engineers and builders, has announced the appointment of Dr. Gwoh-Liang Lee as its representative in China with headquarters at Hankow.

Donald I. Graham, Jr., has been appointed safety director and chief of the Safety Section of the National Bureau of Standards.

OFFICE NOTES

Offices Opened, Reopened

Announcement has been made of the formation of a new agency called Career Builders, specializing in the placement of architectural personnel, industrial designers, interior decorators and sales personnel. Address: 35 W. 53rd St., New York 13, N. Y.

James Allan Clark Associates, Architects-Engineers, have announced the opening of offices in Winchester, Ky.

Conner and Pojezny, Architects (R. Duane Conner and Fred Pojezny, Jr.), have opened a new office in the Kerr-McGee Bldg., Oklahoma City, Okla.

Arthur J. Dupré, Architect, has announced the opening of his office for the practice of architecture, specializing in residential and apartment buildings. Address: 1595 W. Fifth Ave., Columbus 8, Ohio.

Robert H. Fraser, P.E., announces the opening of his consulting engineer's office at 154 Nassau St., Room 2005, New York 7, N. Y. His service to architects will include design of structural work, plumbing, heating and ventilating, and electrical work.

Joseph A. McGinniss has opened an office for the preparation of architectural specifications at 67 E. 59th St., New York 22, N. Y.

William M. Rich, Architect, has opened an office at 1607 W. Howard St., Chicago 26, Ill.

Emerson C. Scholer, A.I.A., has opened an office for the general practice of architecture at 41 W. Alameda, Tucson, Ariz. For the past two years Mr. Scholer has been a member of the firm of Starkweather and Scholer.

Kenneth White has announced the opening of his firm, Ken White Asso-

(*Continued on page 160*)

SEAL-O-SAN
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H-Section Welded Truss Has Wide Adaptability

By J. K. GANNETT, Vice President and Director of Engineering and Research
The Austin Company
Cleveland, Ohio

THE standard H-section welded truss designed by The Austin Company greatly simplifies the designing of one-story industrial buildings and effects many economies in their construction.

The truss, using H-Sections with all webs in a vertical plane and with all connections made by direct fillet welds without the use of gusset plates, is shop-fabricated in standard 50, 60, 70 and 80-foot lengths. It is readily adaptable to different loadings by simply changing the weights of the beams used for the various members. The depths need not be changed, thus standard jigs are used for economical fabrication. Fig. 1 shows one of the trusses being finish-welded.

The top chord is a wide flange beam that can carry purlins at a variety of spacings without regard to panel points, and is also adaptable to continuous uniform loading. The bottom chord can carry loads at any point and can be used as a monorail. See Fig. 2. Thus the truss is adaptable to a wide variety of loading demands and factory arrangements which ordinarily require specially-designed trusses.

Economical Fabrication

Fabrication is quite economical because it has been reduced to three simple operations: cutting the members to length, assembly and welding.

Since the truss members are abutting instead of lapping, it is important that they be cut to exact length and angle. A large friction saw is satisfactory for cutting the chord members, while an abrasive saw is used to cut web members to the exact angle required.

For assembly, the members are simply "laid in place" in the horizontal jig. Jigs greatly reduce production costs and insure that the webs of all members are placed in precisely the same plane. Monorail hoists are used to place the chords, but the short web members are usually so light that two men can quickly place them by hand.

After the truss is tack welded, it is removed from the jig and stood on its bottom chord, being held at the top by monorail hoists. The bottom chord joints are then finish welded as shown in Fig. 1. Then the truss is turned upside down and all top chord joints welded. This procedure permits 100% down-welding.

All of the welds are fillets, ranging from ¼″ to ⅜″, depending on the size of the truss and the location. A 50-foot truss requires a total of 41 lineal feet of fillet welds.

No Cut Edges Exposed

The fillets are run completely around the members at their end connections. Thus all cut edges are covered and only the original rolled surfaces are exposed, which increases resistance to corrosion and simplifies painting and maintenance.

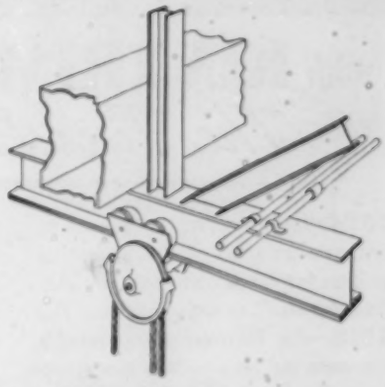

Fig. 2. How bottom chord can be used to support various loads and serve as monorail.

This fabrication procedure exemplifies the economy and simplicity obtainable in structures of good welded design. There is no punching, coping or chipping; no templates are needed; all welding is the simplest possible—horizontal fillet welding; and, except for the end connection, every pound of steel is in a truss member—there is no detail material such as gusset plates, fillers or stiffeners.

This truss has been thoroughly tested and has been—or is being—incorporated in Austin buildings, from coast-to-coast with an aggregate floor space of over three million square feet.

New developments in welded design are thoroughly described in "Studies in Structural Arc Welding," available free to engineers. Write The Lincoln Electric Company, Dept. 263, Cleveland 1, Ohio.

Fig. 1. Finish-welding diagonal and vertical web members to bottom chord of an H-truss.

Advertisement

ciates, with offices at 516 Fifth Ave., New York 18, N. Y., for retail planning, development and design.

New Addresses

The following new addresses have been announced:

Childs & Smith, Architects (Frank A. Childs, William Jones Smith, O. H. Breidert, J. F. Ringhofer), Opera Bldg., 20 N. Wacker Dr., Chicago 6, Ill.

J. Lloyd Conrich, Architect, 593 Market St., San Francisco 5, Calif.

George M. Cushing, Jr., Photography, 221 Columbus Ave., Boston 16, Mass.

Franklin, Kump & Falk, and Ernest J. Kump Co., 9 Main St., San Francisco 5, Calif.

Eugene & Max Fuhrer, Architects-Engineers-Appraisers, Suite 1354, 120 S. LaSalle St., Chicago, Ill.

Henry George Greene, A.I.A., 1741 Broadway, New York 19, N. Y.

Louis G. McNamara, Architect, Suite 744, 53 W. Jackson Blvd., Chicago, Ill.

Paul Rogers, Structural Engineer, 5108 N. Avers Ave., Chicago 25, Ill.

Lawrence H. Singer, Industrial Design, 22 W. 46th St., New York 19, N. Y.

Firm Changes

The firm of Frederick G. Frost, Architects, 144 E. 30th St., New York 16, N. Y., has announced the return of Nembhard N. Culin as an associate member.

The firm of Alfred Hopkins and Associates, Architects, 415 Lexington Ave., New York 17, N. Y., has announced the appointment of W. Frank Bower, Jr., and Ben John Small as associates.

James Bennett Hughes, A.I.A., and Harry M. Denyes, A.I.A., have announced the formation of a partnership under the firm name of Hughes and Denyes, Architects, with offices at 187 S. Woodward Ave., Birmingham, Mich.

Announcement has been made that the firms of B. F. Hunt Associates, Architects, and R. H. Hunt Co., Architects, were dissolved March 1, 1947, and are continuing the practice of architecture under the name of Hunt, Caton and Associates, Architects, with offices in the James Bldg., Chattanooga, Tenn.

George Nemeny, Architect, has announced the formation of an associateship with A. W. Geller, Architect, under the firm name of George Nemeny and A. W. Geller, Architects. The firm will continue at its present location, 14 E. 39th St., New York 16, N. Y.

Edwin A. Thornquist, A.I.A., Everett D. Witte and Sherman A. Smith have announced the formation of a partnership under the firm name of Thornquist, Witte & Smith, Architect and Engineers, for the general practice of architecture and engineering, with offices in the Eisfeld Bldg., Burlington, Iowa.

Richard L. Tully, A.I.A., Frederick H. Hobbs, Jr., A.I.A., and Walter C. Hansen, A.I.A., have announced formation of a partnership under the firm name of Tully, Hobbs & Hansen, Architects, with offices at 582 Oak St., Columbus 15, Ohio.

ERRATA

In the report of the Princeton Conference "On Planning Man's Physical Environment" in the April ARCHITECTURAL RECORD (pp. 98–100), there were two caption errors. Alvar Aalto's name was misspelled, and Gyorgy Kepes of the M.I.T. staff was designated M. Roberto of Brazil. Our apologies to both.

Max Abramovitz calls our attention to the fact that he did not "operate wartime flying fields in China" as stated in the caption on p. 113 of the April RECORD, but, as aviation engineer officer, planned and coordinated construction of operational flying fields in China under the staff engineer of the 14th AAF.

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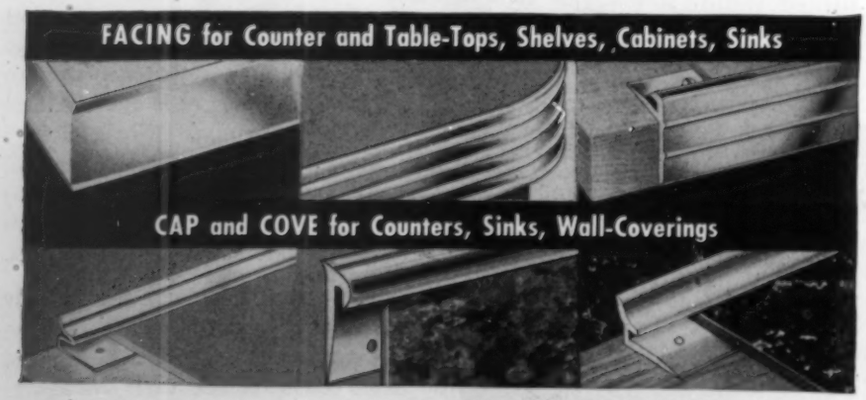

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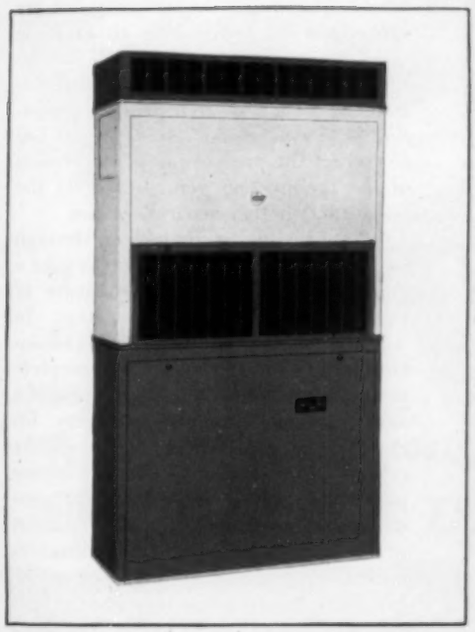

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Packaged Air Conditioners

HEATING • AIR CONDITIONING • COMMERCIAL REFRIGERATION

THE ATTITUDE OF THE YOUNG PRACTITIONER

(*Continued from page 103*)

Back in the early '30s, when the first United States Housing Act was passed, the Institute should then have either gotten behind it or have proposed some constructive alternate suggestions; if only for purely selfish reasons since at that time approximately 75 per cent of us were unemployed. Instead, the Institute not only completely failed to cooperate with those working on the bill, but at various stages opposed it. However, within several weeks of the day it was finally passed, a very prominent member of the Institute approached Mr. Strauss, the new administrator, to assure the employment of private architects on public housing as well as to insure inadequate payment for their services. Although I fully approve of being employed and adequately paid, this instance illustrates very well the main shortcoming in the Institute's present public relations policy. It appears to be operating like any other private pressure group on a basis of self-interest only. Most of us realize that before we can insist on being remunerated for what we do, we must demonstrate the value of what we do.

The Institute has not always acted thus. At the end of the first World War, the Institute Bulletins were the best source of information on housing matters and the names of committee members and honorary associates of the Society — Stein, Ackerman, Whitaker and Edith Wood — were those at the forefront of the whole housing movement. We should all of us take a look at the A.I.A. book, *Housing Problems in War and Peace*, published in 1918. It is a sorry commentary on the present state of the A.I.A. that your own publication, issued 30 years ago, makes more interesting and vital reading today than those you are issuing now.

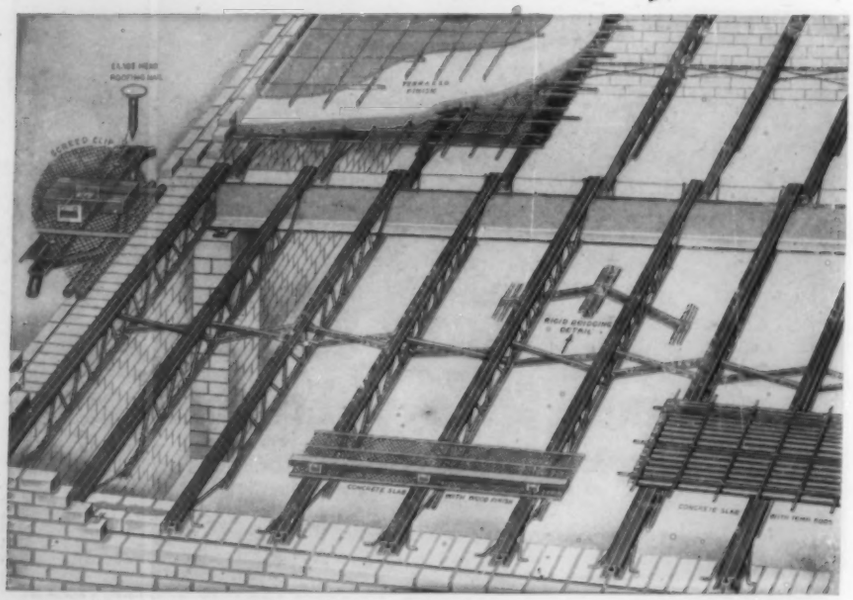
It is almost impossible to document the impression which so many architects and non-architects have regarding the negative approach of the A.I.A. to the problems of today. In fact, in going over the Institute's recent publications, I am forced to admire the dexterity of its spokesmen in being able to straddle every fence while keeping both ears to the ground. Such gymnastic considerations aside, if the architectural profession is to be of service to society it has to correct the present public impression of the architect as represented by the Institute, whether accurate or not.

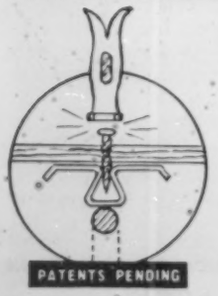
What should the profession, through its Institute, be doing? We might take a quick look at the Royal Institute of British Architects for inspiration. In August, 1942, the R.I.B.A.'s reconstruction committee, in a very complete program, recommended the creation of a single national planning authority, including among other things public control of all land in England, whether publicly or privately owned; the production of a maximum possible output of good building through the utilization both of traditional methods and of the greatest practicable proportion of factory production to site work; the expansion of centralized research made independent of outside donations by a sufficient treasury grant; etc. Our solutions for different conditions under a different form of government will not be the same. The point is that the R.I.B.A., old and established though it is, is helping to form government policy — not obstruct it. Further, the R.I.B.A. has provided all available facilities, and has actively cooperated in the publicizing of the National Plan of London, one of the most comprehensive and progressive plans ever proposed for the redevelopment of an immense urban area.

Like the R.I.B.A., the Institute must adopt a constructive program. Goodness knows the way is still open. There

(*Continued on page 164*)

MACOMBER
V TYPE
BAR JOISTS





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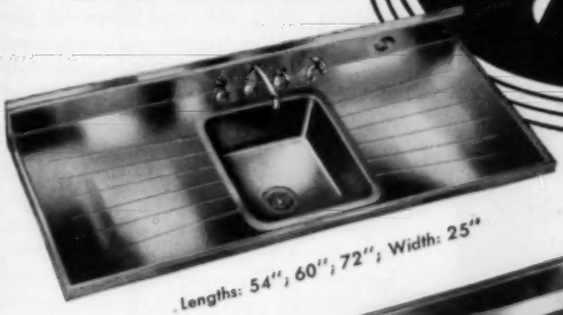

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THE ATTITUDE OF THE YOUNG PRACTITIONER

(*Continued from page 162*)

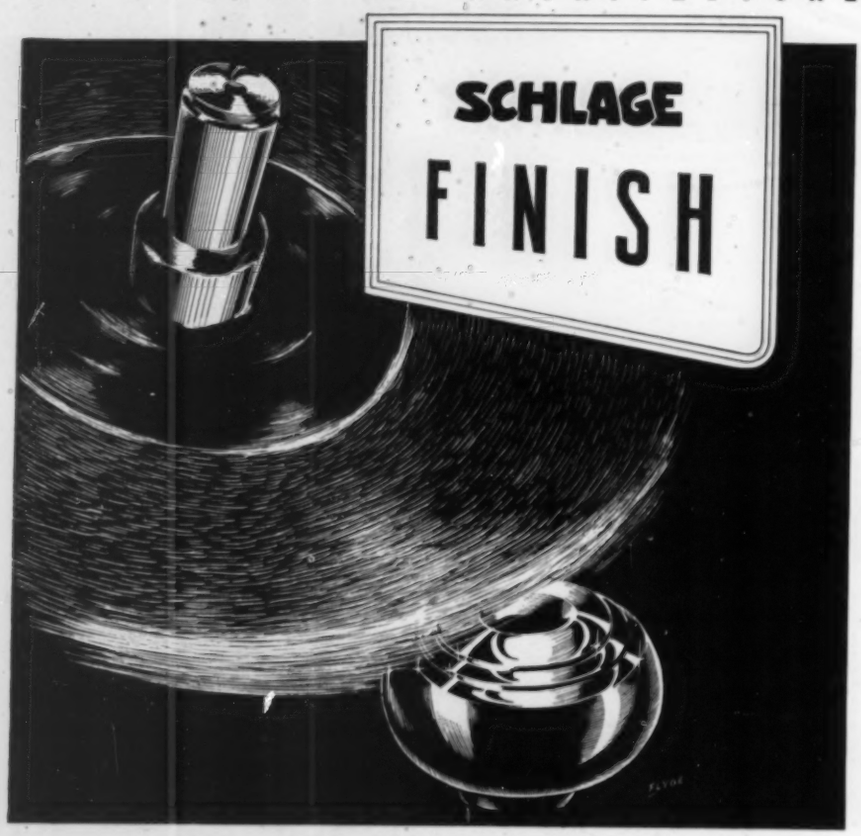
is still no real understanding in America of the horror which the next 10 years of uncontrolled development will bring. Although the Institute obviously cannot do the job alone, it can cooperate actively with others who are interested in saving the situation. In fact, an alignment and close participation with progressive groups holding this aim is one of the most important things the Institute can achieve. This raises several questions which both members and nonmembers of the A.I.A. would like to have answered. Are the interests of the Institute the same as those of the National Association of Real Estate Boards, the Producers' Council and the National Association of Home Builders? If not, can't the various misconceptions in this regard be cleared up?

One suggested change, among many that could be mentioned, regards the attitude of the Institute toward the younger or more progressive members of the profession. The Roster of the A.I.A., reinforcing as it does the position of the already well established practitioner, naturally appears inexcusable to those less experienced and still seeking to establish themselves. Another indication of this attitude has apparently been shown in one A.I.A. committee — the Competition Committee — which could be (as it is in the Institutes of other countries) a tremendous force for bringing forward the best professional material, for publicizing the profession, and for lending a helping hand to an unknown, but deserving, architect. According to one member of this very committee, apparently all constructive suggestions have been shelved and it is in fact a committee in name only.

We all realize that public relations are our biggest problem. We must show America what the real scope of the architect is. Community planning, comprehensive building code revisions, well designed, mass-produced industrialized housing, both actively encouraged and controlled — all these are vital issues on which America's future depends. And it is in these fields that we must provide inspiration and leadership. In so doing, we can, through exhibitions, movies, lectures, study courses, articles and pamphlets, provide a much needed educational service. An important by-product (but only a by-product) will be the people's growing knowledge of the architect's value. All of us as private architects have been disturbed by the lack of understanding between us and the various government building agencies by whom we have been employed. It has been a shock to many of us to realize (and this has been part of the reason for this lack of understanding) that none of these administrators in policy-making positions is an architect. The reasons for both these unhappy facts are directly attributable to the uncooperative attitude of so many in the profession toward the aims and purposes of these agencies. If we do not stand behind necessary and inevitable legislation what chance do we have to participate in its successful administration when passed?

In conclusion let me repeat something I said earlier. We realize that as nonmembers we have little right to keep on criticizing. We realize further that we have been judging the Institute for past actions, that it is growing and changing. We are desperately anxious to get in and push, not stand outside shouting directions. If we've gotten too excited in our shouting, it's partly your fault. You've made us think the Institute is really going somewhere. If it is going where we want to go, we are all going right along with it.

IMPLEMENT OF ARCHITECTURE



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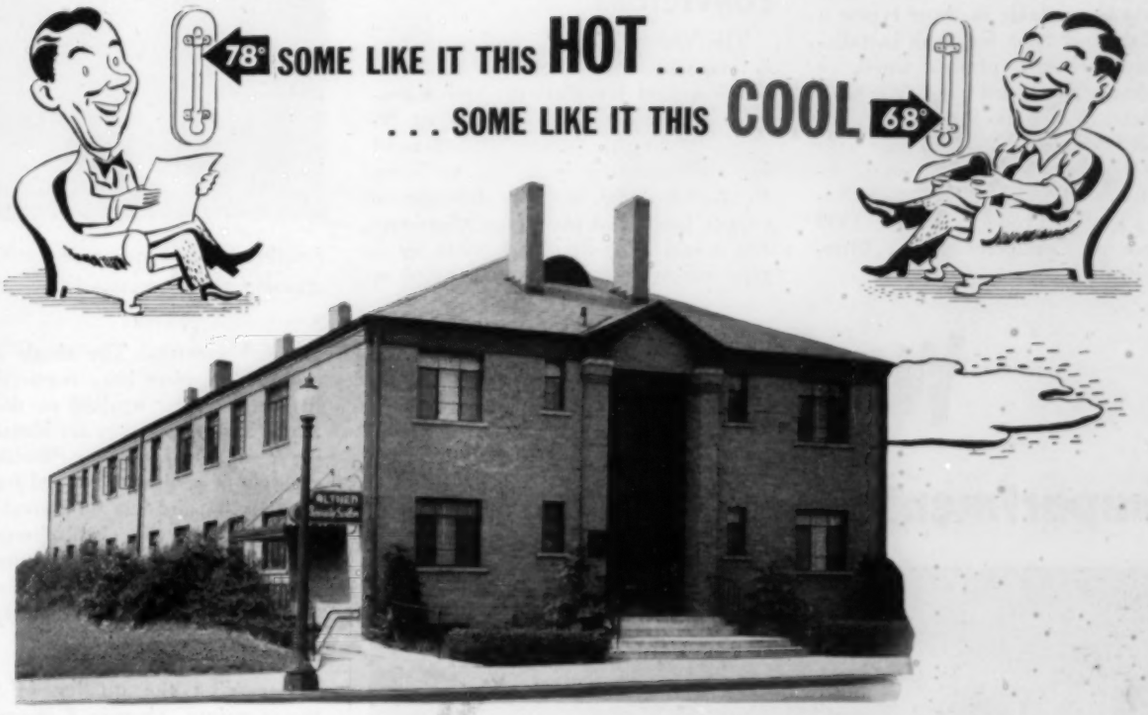

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Janitrol GAS-FIRED HEATING EQUIPMENT

(*Continued from page 143*)

electric appliances in use in homes today. The strip is available in three types: a concealed flush type for flush installations in baseboard, plaster, wood, or metal tile; a baseboard cape type with one quarter round trim for use on top of baseboards; and a chair-rail type with quarter round trim on both sides, designed for mounting on any surface. National Electric Products Corp., 1330 Chamber of Commerce Bldg., Pittsburgh, Penn.

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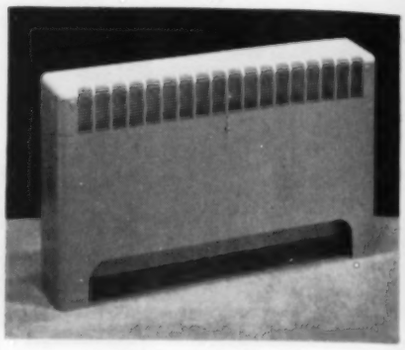

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HOUSE PAINT

Regarding the quality of postwar house paints, Sherwin-Williams states that wartime research has resulted in paints of improved quality; and that while house paint is not yet out of the scarce class, production is mounting. According to reports, the new Sherwin-Williams paint has a greater pigment content and a binder made up of polymerized and raw linseed oil, which results in a higher gloss and smoother finish than prewar paint. Other advantages are said to be shorter drying time and harder finish.

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(*Continued on page 168*)

Q. *What is the proper way to mount an attic ventilating fan?*

A. *See Balsam-Wool Data Sheet Section F No. 2.*

Q. *What is an efficient but inexpensive way of reducing sound transmission through walls and floor?*

A. *See Balsam-Wool Data Sheet Section G No. 2.*

Q. *What are the advantages of the eleven ways of preventing excessive condensation within a house?*

A *See Balsam-Wool Data Sheet Section A No. 6.*

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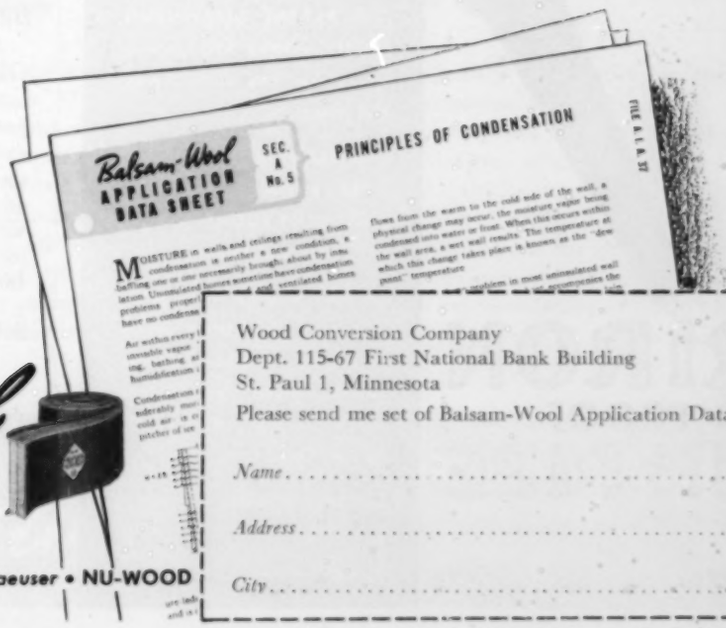

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(Continued from page 166)

signed to screen out sun rays from mid-morning to late afternoon and reflect back the sun's heat. The screening comes in a roll like ordinary wire screen in widths from 24 to 36 in. Warp Bros., 1100 N. Cicero Ave., Chicago 51, Ill.

BUILDING PAPER

Moisture- and vapor-resistant *Presstite Barrier Paper* has been announced for use in side walls between sheathing and facing materials, under flooring, and for roof decks. It is also suggested for use in the construction of locker plants and other cold storage areas to protect insulation against the infiltration of moisture vapor. This barrier paper is tough kraft paper saturated and coated with a gilsonite, asphalt and wax compound; black in color, and said to be flexible, odorless, and non-shrinking after wetting. Presstite Engineering Co., 3900 Chouteau Ave., St. Louis, Mo.

HOW WILL YOUR HOSPITAL GET RID OF WASTE CORROSIVES?

Duriron acid-proof drain pipe, sinks, sink outlets, and traps provide permanent safe exit for all hospital corrosives.

Their corrosion-resistance is uniform throughout because they are made entirely of Duriron, a special corrosion defeating, high-silicon iron. Their acid-handling ability does not depend on a lining that can wear, chip, crack or spall.

Write for bulletin 703.

THE DURIRON CO., Inc.
DAYTON 1, OHIO

WHERE DURIRON IS USED IN THE MODERN HOSPITAL

LABORATORIES, GENERAL AND OUT PATIENT DEPARTMENTS, NURSES' HOMES, ETC.: Laboratory sinks, sink outlets, traps and drains.

PHARMACIES, KITCHENS, X-RAY DARK ROOMS, TREATMENT AND UTILITY ROOMS: Sink outlets, traps and drains.

BATTERY ROOMS: Floor drains and drain line. Often require corrosion-resisting pumps, valves, flanged pipe and fans, which are also made by The Duriron Co., Inc.

AUTOPSY ROOMS: Sink outlets in tables; traps.

DURIRON
ACID PROOF
DRAIN PIPE

36-GM

Aluminum ducts for heating or ventilating

ALUMINUM AIR DUCTS

Aluminum has been recommended for duct work in residential heating and commercial and industrial air conditioning. Advantages are said to be its resistance to rusting and corrosion, low heat emissivity which decreases heat loss through duct walls, attractive silvery appearance, and improved fabrication which results in neater installation and less scrap. Another advantage, of course, is the light weight of aluminum which permits large stacks to be assembled on the ground and raised into position, rather than assembled in place, section by section. Similarly, fewer and lighter supports are required. In addition to its use for air ducts, aluminum is suggested for the following heating, ventilating and air conditioning work: duct dampers, return air runs in foil, furnace and blower casings, smoke pipes, flue pipes, coal furnace bonnets, chimney liners, condensation tees and traps, spray chambers, and cooling towers. Reynolds Metals Co., 2500 S. Third St., Louisville 1, Ky.

DRAFTING BOARD COVER

A plastic-coated paper has been developed for covering drafting boards. It is light green in color, with a washable finish; heavy enough to cover pinholes and yet flexible enough to bend around the edges of the board. Other announced advantages are absence of curling or wrinkling, and a hard, smooth surface for better tracings. Charles Bruning Co., Inc., 4700 Montrose Ave., Chicago 41.

SHOWER DOORS

An adjustable jamb is reported to make installation of watertight shower doors and tub enclosures an easy matter. The doors are designed to fit the basic types of stall showers and tubs, and feature aluminum-alloy construction, and rubber-mounted glass. Shower Door Company of America, 973 Peachtree St., N. E., Atlanta 5, Ga.

(Continued on page 170)

Meeting a "Must" for high heat transfer efficiency

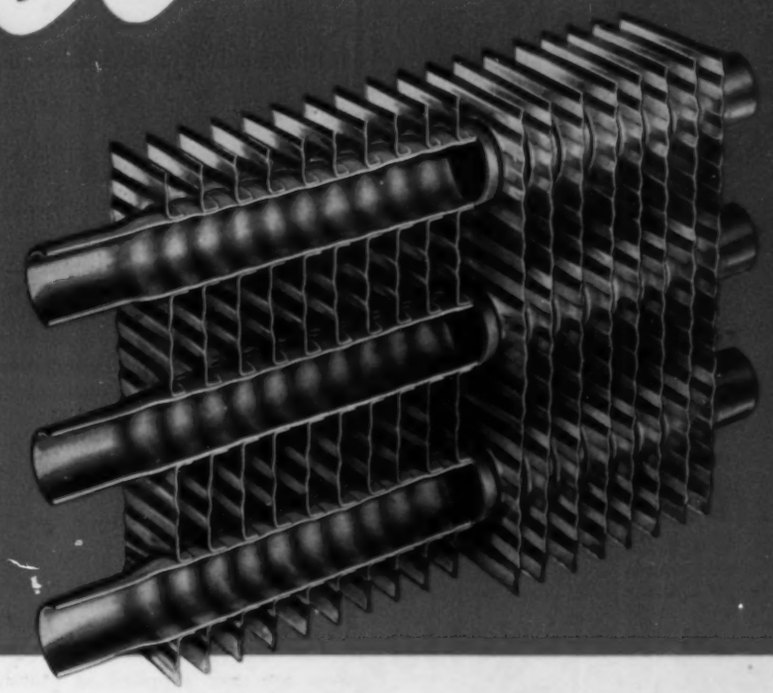
Contact

McQuay

RIPPLE FIN COILS

give you more in

1. AREA OF CONTACT
2. CONSTANCY OF CONTACT
3. QUALITY OF CONTACT



HYDRAULIC EXPANSION assures top performance!

Three exclusive McQuay methods assure positive contact, high heat transfer efficiency in McQuay Ripple Fin Coils. Wide, spun fin collars put more metal on metal, provide a greater *Area of Contact* for fast, low-loss heat transfer. McQuay's hydraulic expansion method locks fin to tube in a permanent mechanical bond for *Constant Contact* under all operating temperatures. Fin surfaces smoothed by the spinning action of the collar-forming tool permit a more uniform metal-to-metal junction between collar and tube, assure high *Quality of Contact* for maximum heat transfer to the secondary surfaces.

Compact, shockproof McQuay Ripple Fin Coils together with McQuay elliptical copper headers have proved their durability over many years to a wide list of industrial users. Today there are McQuay coils to meet your specifications for steam, hot water, direct expansion, brine and special applications. Call your local McQuay representative or write McQuay, Inc., 1605 Broadway Street N. E., Minneapolis 13.

McQuay INC.

AIR CONDITIONING EQUIPMENT ESPECIALLY DESIGNED FOR INDUSTRY

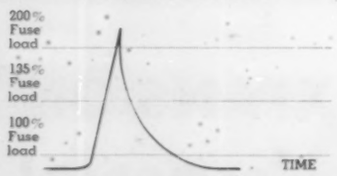
MAKE THE SEASONS COME TO YOU

STOP
UNNECESSARY
FUSE
BLOWING

INSTALL
PIERCE
Balanced Lag
RENEWABLE FUSES

Exclusive Features, developed by Pierce engineers, dissipate heat by:
1. Link Design
2. Screen Ventilation

Typical High overload surge



NOTE: The elapsed time at 200% fuse load is a few seconds, but at 135% load may be many minutes.

Pierce Balanced Lag fuses concentrate additional lag in the safe overload range, from 100% to 200% load, where lag is needed to prevent unnecessary fuse blows.

FREE: Balanced Lag Link to inspect and test. Specify amperage, voltage.

ARCHITECTURAL ENGINEERING

TECHNICAL NEWS AND RESEARCH

(*Continued from page 168*)

Bedroom balcony featured in small house

SMALL HOUSE DESIGN

A compact "Dream House," measuring only 20 ft. by 24 ft., has been designed for Armstrong Cork Company by Hazel Dell Brown in collaboration with Burton Ashford Bugbee, A.I.A. Chief features of the house are its shed roof and sleeping balcony which increase floor area more than 30 per cent and give an open effect not usually found in such a small house. It contains a living-dining room of two-story height, a balcony bedroom, small kitchen, bath, four closets, and a utility room. Armstrong Cork Co., Lancaster, Penn.

DRAFTING MACHINE

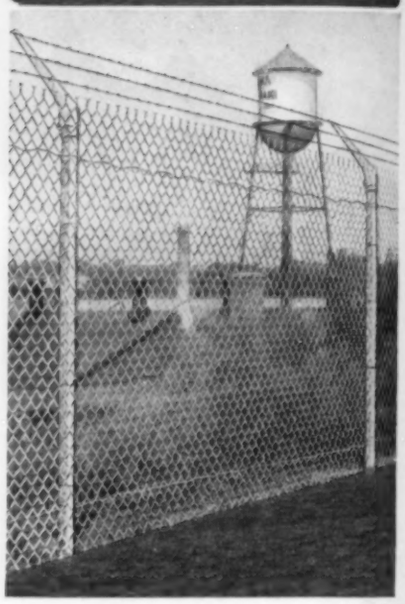
A new model of the *Vemco Drafting Machine* has been announced. Band covers are now supplied as standard equipment, and metal brake plates replace the plastic ones used during the war. Finish is blue-green; and bright parts are satin-finished and tarnish-proofed. V & E Manufacturing Co., Dept. AR, 758 Fair Oaks Ave., Pasadena, Calif.

WINDOW VENTILATOR

Exhaust-type insulation is provided by the *Splend-Aire* electric-operated window ventilator, supplying about 12 air changes per hour in a residential room of average size. The installation of four screw fasteners in a window makes the ventilator a portable unit for use in any window so equipped. The unit does not interfere with window operation, since the sash can be closed behind it when desired. Operation is reported to be quiet enough for use in sleeping rooms. Models come in three sizes to fit windows measuring 22 to 27 in., 24 to 31 in., and 27 to 36 in. in width. The ventilator is a 110-volt, 60-cycle, alternating-current type, equipped with an 11-ft. cord. Finish is ivory enamel with chrome trimmings. Metal-Tex Corp., 1600 Junction Ave., Racine, Wisc.

(*Continued on page 172*)

HOW TO WRITE
LONGER LIFE-- MORE PROTECTION
INTO YOUR FENCE SPECS!



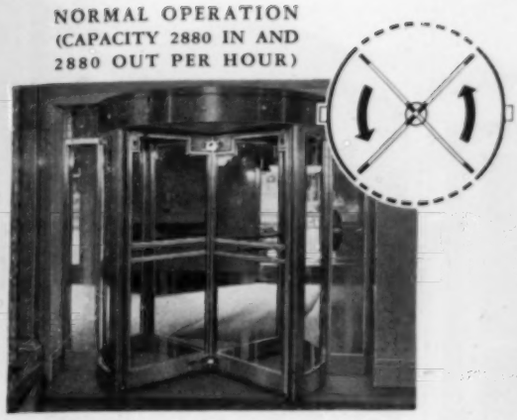
SPECIFYING *Anchor Chain Link Fence* is the answer to that one . . . whether you're handling industrial, institutional or residential jobs! For years, leading architects have been relying on *exclusive* Anchor features like these to insure lasting fence protection for their clients:

1. *Deep-Driven Anchors*, which hold the fence erect and in line, in any soil or weather, yet permit easy relocation at any time; 2. *Square Frame Gates*, amazingly free from warping and sagging; 3. *U-Bar Line Posts*, self-draining, rust-free and rigid; 4. *Square Terminal Posts*, which improve strength, durability and appearance.

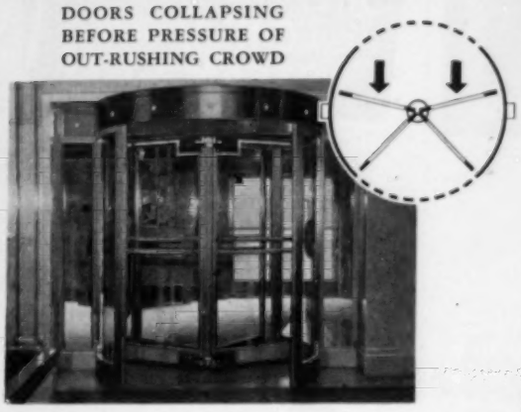
Your A.I.A. File 14-K isn't complete if you don't have our book, "Anchor Protective Fences." Write for your free copy today. It shows many types and uses of Anchor Chain Link Fence . . . pictures installations for many prominent companies and institutions . . . contains structural diagrams and specification tables. Just ask for Book No. 110! Address: ANCHOR POST FENCE DIV., Anchor Post Products, Inc., 6600 Eastern Ave., Baltimore 24, Maryland.

Anchor Fence
Nation-wide Sales and Erecting Service

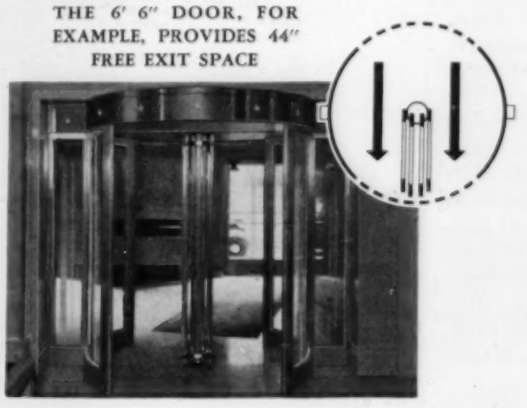
NORMAL OPERATION
(CAPACITY 2880 IN AND
2880 OUT PER HOUR)



DOORS COLLAPSING
BEFORE PRESSURE OF
OUT-RUSHING CROWD



COMPLETELY COLLAPSED.
THE 6' 6" DOOR, FOR
EXAMPLE, PROVIDES 44"
FREE EXIT SPACE



Designed FOR COMPLETE SAFETY...

...THEY *Give* COMPLETE SAFETY

First consideration in any public building plan—new construction or remodeling—is SAFETY! And the first point of safety is the entrance, the most used part of any building. In emergencies as well as day-in and day-out handling of traffic, International Van Kannel Revolving Doors protect you and users of your building from accidents. Should emergency necessitate quick, unhampered egress, International's exclusive panic-action mechanism allows the wings to fold outward before rushing crowds. For complete safety, plus many other money-saving advantages outlined below, no other make or type of entrance equals . . .

REVOLVING
INTERNATIONAL
DOORS
VAN KANNEL ATCHISON

When Considering Doors, Ask These Questions About Revolving Doors

1. WHAT SPECIAL SAFETY FEATURES SHOULD THEY HAVE? First, immediate and unimpeded egress in emergencies. With International Van Kannel Revolving Doors, slight excess pressure on any two wings in opposite directions causes the wings to open outward. International's exclusive, adjustable tension, ball-and-socket mechanism assures years of dependable service with a minimum of upkeep.

2. HOW ABOUT HEATING AND COOLING COSTS? International Van Kannel Revolving Doors provide savings in heating and cooling up to 25% . . . in many instances more.

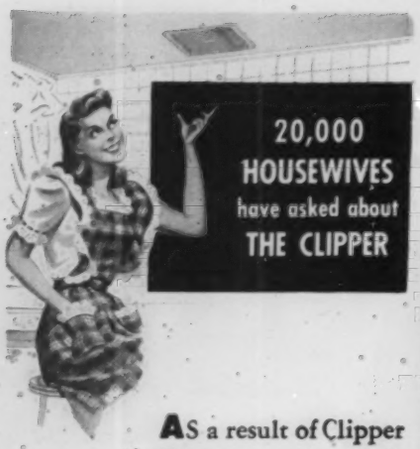
3. WILL REVOLVING DOORS INCREASE OR DECREASE USABLE FLOOR SPACE? International Van Kannel Revolving Doors, by eliminating drafts and controlling warm air loss, allow counters and work areas right up to the door itself, thereby materially increasing "pay" space in the building.

4. CAN THEY HANDLE DAILY TRAFFIC EFFICIENTLY? Elimination of cross traffic reduces confusion, speeds up crowd handling. Revolving Doors by International can handle up to 2880 passages per hour smoothly and safely . . . with surprisingly small air-loss.

5. HOW ABOUT DUST, DRAFTS, NOISE, ESPECIALLY IN HIGH WINDS? Tall buildings are like chimneys. Suction drafts (up to 60 m.p.h.) make swing door operation almost impossible. Revolving Doors are balanced. High winds do not affect their efficient air-seal, which keeps out dust and disagreeable outside noise.

6. HOW ABOUT COST? First cost of International Van Kannel Revolving Doors is actually less than swing doors of comparable traffic capacity . . . and they are far superior in economy of maintenance and length of service.

FOR COMPLETE INFORMATION, WRITE INTERNATIONAL STEEL CO., REVOLVING DOOR DIVISION, 1530 EDGAR ST., EVANSVILLE 7, IND.

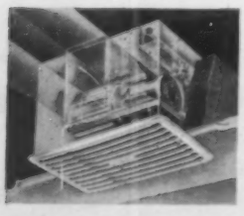


AS a result of Clipper Blower consumer advertising more than 20,000 housewives asked about the Clipper last year. This can mean real business for you.

These patented small room ventilators are specially designed for kitchens, bathrooms, dens . . . as well as for ticket booths, X-ray rooms, toilets, clinics—in fact any small room. They are mounted in the ceiling between joists and vented outside—they trap and expel unwanted air, heat and odors the instant they rise.

Unlike any other equipment, the Clipper Blower is a complete packaged ventilator in which the motor is entirely removed from the air stream—away from all contaminated air. This means greater efficiency, longer life and easier servicing.

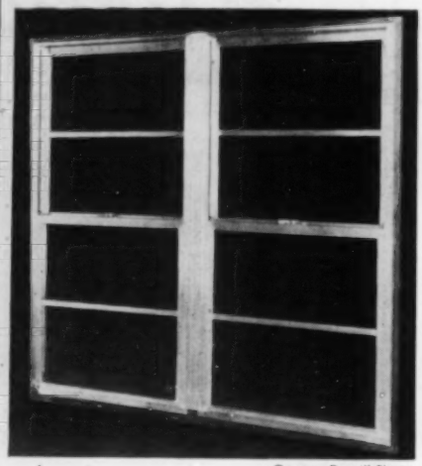
Clipper Blowers are available through leading electrical dealers everywhere. Write us for Bulletin 600-B just off the press.



The Clipper is a complete packaged ventilator which is hidden in the ceiling. Only an inconspicuous "dripless" ceiling grille is visible, yet motor and blower assembly are instantly removed without tools for service.

TRADE-WIND MOTORFANS, INC.
5707 SO. MAIN ST., LOS ANGELES 37, CALIF.

(*Continued from page 170*)



George Dorrill Photo

Aluminum windows have a wood sub-frame

WINDOWS

Aluminum

Announcement of a complete line of aluminum windows, screens, and storm sash features the *Cupples A-100* double-hung and picture windows, equipped with a sub-frame of redwood or western red cedar. Window members of extruded aluminum have a satin-gloss finish. Units are shipped unglazed, completely assembled and ready to install. All hardware and anchors are attached. The double-hung units are available in eleven stock sizes with four different glass (muntin) arrangements. Multiple units are formed in either straight runs or at angles with one of three standard mullions. Picture windows come in 12 stock sizes for use alone or with double-hung units as "flankers." They take either single or double glazing. Cupples Products Corp., 2650 S. Hanley Rd., Maplewood, St. Louis 17, Mo.

Stainless Steel

Fulvue Windows are of stainless-steel double-hung construction. Inside runners encase panes, exerting constant pressure, and are of resilient design for smooth operation. Multiple units may be installed in large openings, and have thin mullions for admitting a maximum of light. A special type of weather-stripping forms an integral part of the window. Warrington Bros. Mfg. Co., Dept. AR, 4871 San Fernando Rd., Los Angeles, Calif.

ALUMINUM TRIMS

Chromedge channel strip and threshold weather strip are newly announced items of metal trim. Design of the strip is said to make possible the insertion or removal of sliding glass doors or other panels

(*Continued on page 174*)

ONE *Product*... ONE *Name*
...ONE *Quality*—
STEAM-CHEF

We make one product only—Steam-Chef Steam Cookers—in several sizes, materials, and types. But no matter which size or model you choose, you get the same advanced engineering and fine craftsmanship. Remember that—when you purchase a steamer.

Steam-Chef is the star performer in thousands of kitchens, and can be in yours, too. Compact, sensationally economical, quick and easy to operate, versatile (cooking, precooking, scalding, warming, canning, etc.)—Steam-Chef does a really superb job of retaining natural flavors and food values.

For permanent service and satisfaction—down to the last dollar of your investment—make it a Steam-Chef, the first quality steamer.

Made for direct steam or gas operation. You can get new Steam-Chef Catalog, also valuable booklet "For Better Steaming" from your jobber or from us.

THE CLEVELAND RANGE CO.
2333 Lakeside Ave. Cleveland 14, O.

...and One Trap

The makers of Steam-Chef take no chances with haphazard on-the-site venting arrangements. Each Steam-Chef is equipped *at the factory* with special Webster Vent Traps—one for each steam chamber. By turning to Webster, Cleveland Range utilizes 60 years specialized experience in *steam circulation* of the pioneer organization in steam heating and the country's largest thermostatic trap manufacturer.

Whether you specify heating apparatus using steam or steam heating systems for your buildings, call for proven Webster Thermostatic Traps. For complete information on Process Steam requirements, request Bulletin B-1200AR.

WARREN WEBSTER & CO., Camden, N.J.
In Canada, Darling Bros., Ltd., Montreal

BY THE MAKERS OF
Webster
HEATING SYSTEMS

6 reasons why

the new Wakefield STAR helps you

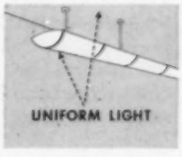
"Hang the Sky"

FOR Over-ALL Lighting

Design Pat Pend.

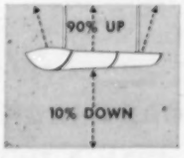
1. Low brightness . . . a maximum of .3 candles per square inch according to ETL test. Means no glare or reflected glare.

4. High efficiency reflecting surface, of Plaskon . . . light weight, non-shattering, non-electrostatic, and reflects 83%.



2. Blends into ceiling . . . means no distracting dark or bright patterns overhead . . . greater eye comfort.

5. Easy to maintain . . . reflectors slide out like a drawer for quick, easy cleaning, maintenance of original light output.



3. Provides soft pleasing indirect light . . . with light distribution 90% UP and 10% DOWN.

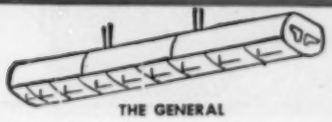
6. No shadows on work . . . because "ceiling of light" means large area source with light over all . . . and thus . . . Over-ALL Lighting!

Wakefield

LIGHTING EQUIPMENT FOR OFFICE, SCHOOL AND DRAFTING ROOM

Over-ALL—
in lighting,
in construction,
in ease of maintenance.

For full details write for Catalog No. 46. The F. W. Wakefield Brass Co., Vermilion, Ohio.



THE GENERAL

THE GRENADIER

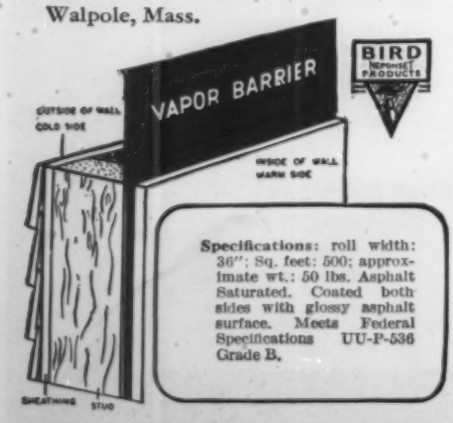
THE COMMODORE

THE DIPLOMAT

Vapor Condensation

but RUINOUS WITHIN WALLS

When moisture vapor "steams up" windows it does no harm, but if it condenses within building walls it can be a four-way evil. Yes, "in-wall" condensation can make insulation soggy and inefficient, cause wall stains, paint peeling — even structure rot. One sure way to beat this building bugaboo is with a *separate* vapor barrier. Standard with architects everywhere is Bird Neponset Black Vapor Barrier. Applied on the warm side of insulation, Bird Neponset Black repels vapor, keeps insulation at peak efficiency, ends all other "in-wall" condensation evils. Only about $20 buys life-long protection for a $10,000 building. Specify the standard — Bird Neponset Black Vapor Barrier. See Sweet's Architectural file, 9b-2, or write for sample to Bird & Son, inc., 176 Wash. St., East Walpole, Mass.



Specifications: roll width: 36"; Sq. feet: 500; approximate wt.: 50 lbs. Asphalt Saturated. Coated both sides with glossy asphalt surface. Meets Federal Specifications UU-P-536 Grade B.

BIRD NEPONSET BLACK VAPOR BARRIER

BIRD & SON inc., E. WALPOLE, MASS.

CHICAGO NEW YORK SHREVEPORT

ARCHITECTURAL ENGINEERING

TECHNICAL NEWS AND RESEARCH

(*Continued from page 172*)

from the side of the channel rather than the ends. The new trim also features a self-anchoring wedge shank to hold the channels in place without nails or other fasteners. The threshold hook strips, drilled and countersunk for screws, are available in standard 32-, 36-, 42-, and 48-in. lengths. B & T Metals Co., Columbus, Ohio.

FIRE-RESISTIVE FABRICS

Noncombustible Fiberglas has been combined with flame-proofed cotton yarns to provide drapery and decorative fabrics for hotels, theaters, restaurants, and schools. Following tests by the Board of Standards and Appeals of New York City, *Plymouth Fire-Guard Fabrics* have been approved as fire-resistive and acceptable for use in places of public assembly in New York City. Such fabrics reportedly can be dry cleaned in the usual way without loss of fire-resistive qualities. Turner Halsey Co., 40 Worth St., New York 13, N. Y.

IRONING BOARD CABINET

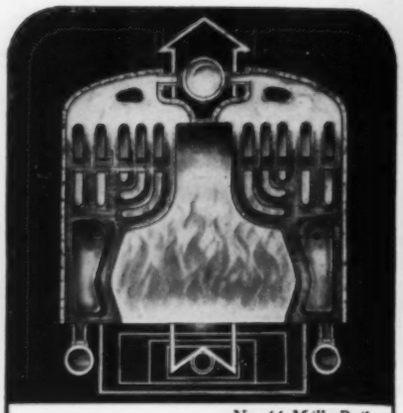
A swivel-type cabinet ironing board offers space savings and convenience in kitchens and utility rooms. The cabinet required an opening of only 14 by 57¼ by 3¾ in., and can be installed either before or after plastering. The ironing board is anchored to a cast aluminum swivel support which holds the board steady when lowered from the cabinet and also permits it to be swung through a wide arc for use at any angle. A fire-safe storage space for the iron is built into the cabinet. L. H. Eubank & Son, Dept. AR, Inglewood, Calif.

SAFETY PLANK

A new type of metal scaffolding plank, for painters, paperhangers, interior decorators, and maintenance men, weighs 34 lb., yet is designed to sustain a load of over 1000 lb. It measures 12 in. in width by 84 in. in length, and has a non-skid surface in the form of a raised grid pattern stamped in the metal. Hooks on each end enable it to be attached to ladder rungs and scaffold supports. LaRay Engineering & Equipment Co., 1029 N. 7th St., Milwaukee 3, Wisc.

RUBBER TILE

Production of *Wrightex* rubber tile, discontinued during the war, has been resumed. *Wrightfloor* is the principal line of hard-surface rubber tile; while *Wrightex* provides a softer type of flooring. Both products are available in ⅛-in. and 3/16-in. thicknesses. Taylor Mfg. Co., Wright Rubber Prod. Div., 3056 W. Meinecke Ave., Milwaukee, Wisc.



No. 44 Mills Boiler

Everything's on the up and up!

When water gets hot it wants to go *up*, and it naturally takes the easy way up — the vertical way — if given a chance. That's why H. B. Smith Cast-Iron Boilers are designed with *vertical* water tubes, for faster water circulation, faster steaming.

There's another important reason for this vertical construction . . . soot won't cling to a smooth, vertical surface. So H. B. Smith sections are practically self-cleaning; the soot-free heating surface takes maximum heat out of the hot flue gases. Within the *vertical* water tubes, any foreign deposits flow freely to the return drums from which they are easily flushed.

That's the vertical story. For more important reasons why professionals recommend H. B. Smith Cast-Iron Boilers for industrial, institutional, commercial and home heating, write for your free catalog.

H.B. Smith

CAST-IRON BOILERS

THE H. B. SMITH CO., INC.,

67 Main St., Westfield, Mass.

Offices and Representatives in Principal Cities

store modernization

gets *new* impetus from

FEDERAL Cold Cathode LIGHTING

SEE OUR EXHIBIT
STORE MODERNIZATION SHOW
JULY 7th TO 12th
GRAND CENTRAL PALACE
NEW YORK CITY

Federal's functional fixtures are easily installed and allow for creative lighting that will blend into any plan. Each fixture is compactly complete in itself containing all ballasts, sockets, wiring and convenient knock-outs and is smartly fashioned for easy conversion into continuous-run lighting.

Federal's clean-cut designs and full range of fixtures give that up-to-date look even without additional remodeling and are responsible for this increasing demand. More and more maintenance-minded customers specify Federal's longer-life cold cathode lighting as the first step in store modernization.

Installation of Federal Cold Cathode Fluorescent units is a far-sighted investment insuring utmost efficiency in operation. The low depreciation, long life of the cold cathode lamps and the year's guarantee on both lamps and fixtures (except for lamp breakage) insure low maintenance cost.

REG. U.S.

FEDERAL ELECTRIC COMPANY, Inc.
8700 SOUTH STATE STREET CHICAGO 19, ILLINOIS

Hillyard Non-skid Floor Treatments, and Economy Maintenance Materials properly care for and make attractive all types of floors in every type of institution . . . give entire satisfaction with less labor. Write for our new "Job Specification" Booklet, it is sent FREE upon request.

HILLYARD SALES CO's

DISTRIBUTORS

HILLYARD CHEMICAL CO. ST. JOSEPH, MO.

370 TURK ST. SAN FRANCISCO 2, CALIF. 1947 BROADWAY, NEW YORK 23, N. Y.

ARCHITECTURAL ENGINEERING

TECHNICAL NEWS AND RESEARCH

(*Continued from page 144*)

Kawneer design staff), showing the various sales building devices that have been used successfully in stores of all kinds and sizes. Stress is on necessity for individual design. Suggestions for a store modernization program are included. 24 pp., illus. The Kawneer Co., 730 N. Front St., Niles, Mich.*

TRUSSES

American Bowstring Wood Trusses. General information on American Roof Trusses, including illustrations of installations in various churches, plants, riding halls, etc. Separate data sheet for architects gives construction details and specifications, information required for estimating costs, advantages claimed. 4 and 2 pp., illus. American Roof Truss Co., 6850 Stony Island Ave., Chicago 49.

WALL COVERING

Di-Lon: The Modern Wall Covering. Description of a line of washable wall papers simulating woods, marbles and leathers. Ordering information, table for figuring requirements, samples of several of the patterns available. 16 pp., illus. The Di-Noc Co., 1700 London Rd., Cleveland, Ohio.

LITERATURE REQUESTED

The following individuals and firms request manufacturers' literature:

A. & M. System Architect, Agricultural and Mechanical College of Texas, College Station, Texas.

Donald O. Allen, Dept. of Public Works, Provincial Hospital, Essondale, B. C., Canada.

John L. Barth, Architect, 39 Lackawanna Plaza, Bloomfield, N. J.

James Allan Clark Associates, Architects-Engineers, Winchester, Ky.

Damon & Foster, Consulting Engineers, Sharon Hill, Penn.

J. Lamar Duller, architectural student, P. O. Box 567, College Station, Texas.

Raymond O. Harrison, draftsman, 3 Curral Rd., Elsternwick S. 4, Victoria, Australia.

McFarland & Brown, Engineers, 172 Washington St., Binghamton, N. Y.

Ellis L. Lavine, Architectural Engineer, 132 Nassau St., New York 7.

William M. Rich, Architect, 1607 W. Howard St., Chicago 26, Ill.

Thornquist, Witte & Smith, Architect and Engineers, Suite 412, Eisfeld Bldg., Burlington, Iowa.

Toro, Ferrer & Torregrosa, Arquitectos e Ingenieros, Navas 560, Santurce, P. R.

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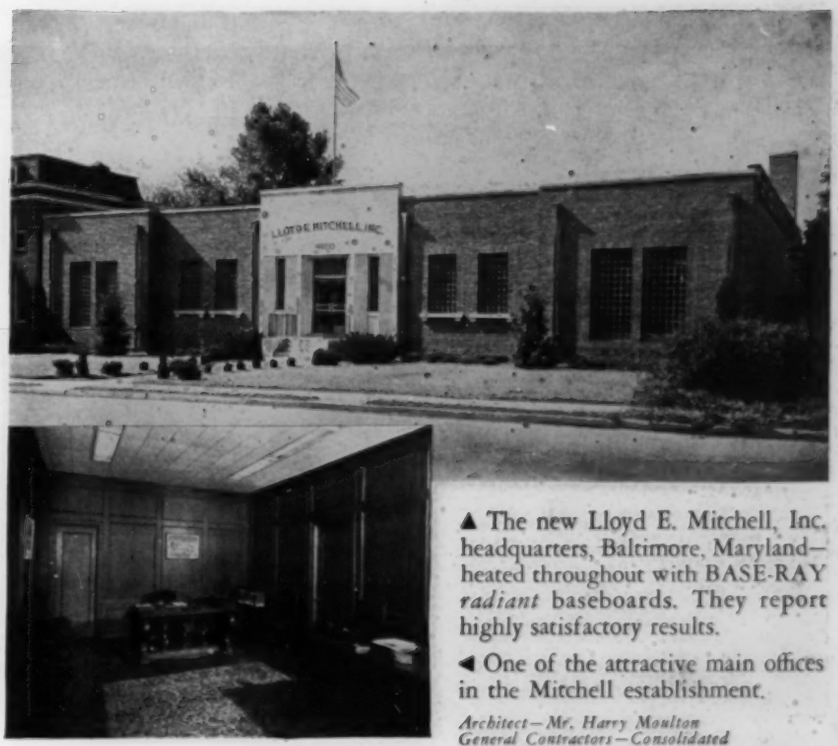

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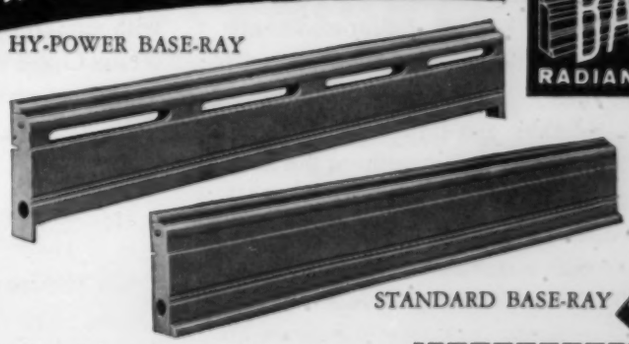

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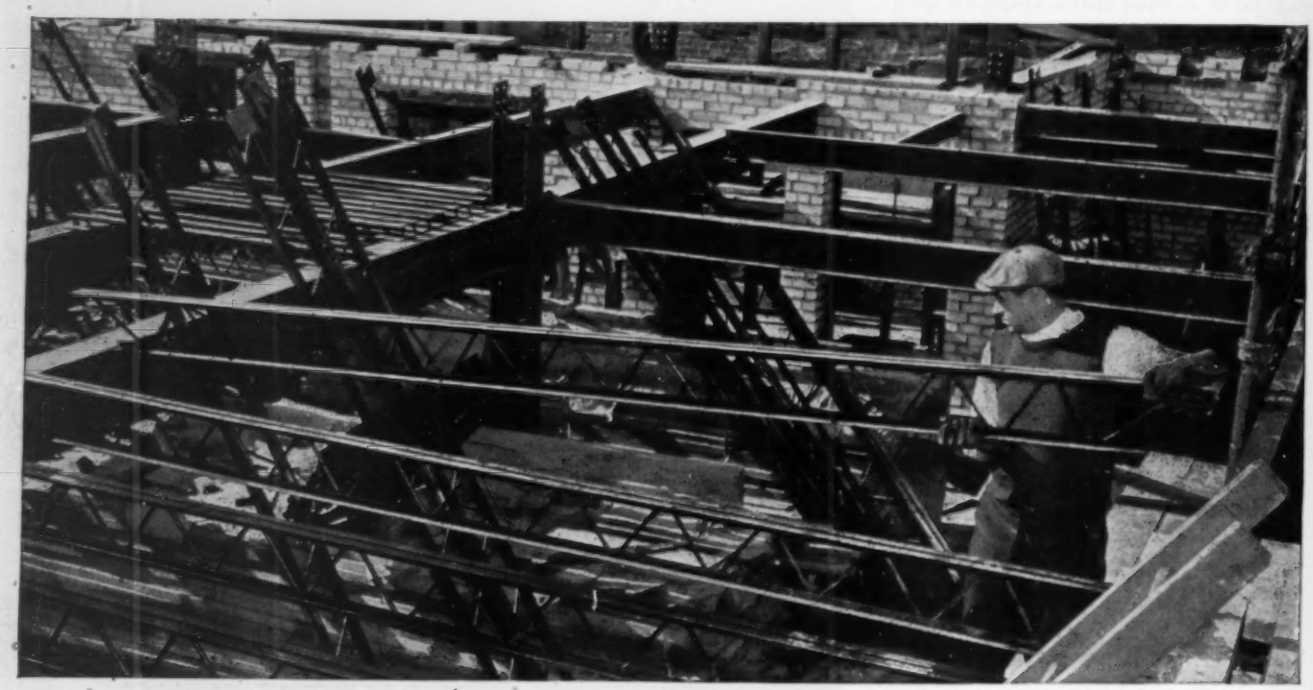

In designing such light-occupancy structures as schools, stores, hotels, homes and apartment houses, there are advantages in using Bethlehem Open-Web Steel Joists which go far beyond dollar-and-cents-savings—considerable as these are.

Bethlehem Open-Web Joists have ample strength to carry their loads—yet they are light enough to be readily handled by one or two men, without the need of falsework. (The Longspan type of joist, which makes possible free floor space up to 64 ft in width, is easily set in place with a light gin-pole.)

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★ BETHLEHEM OPEN-WEB JOISTS ★

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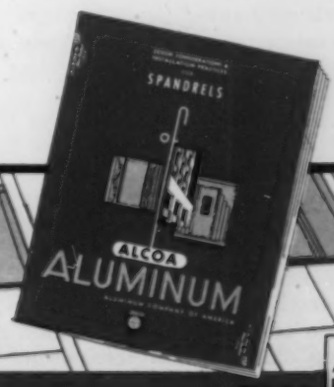

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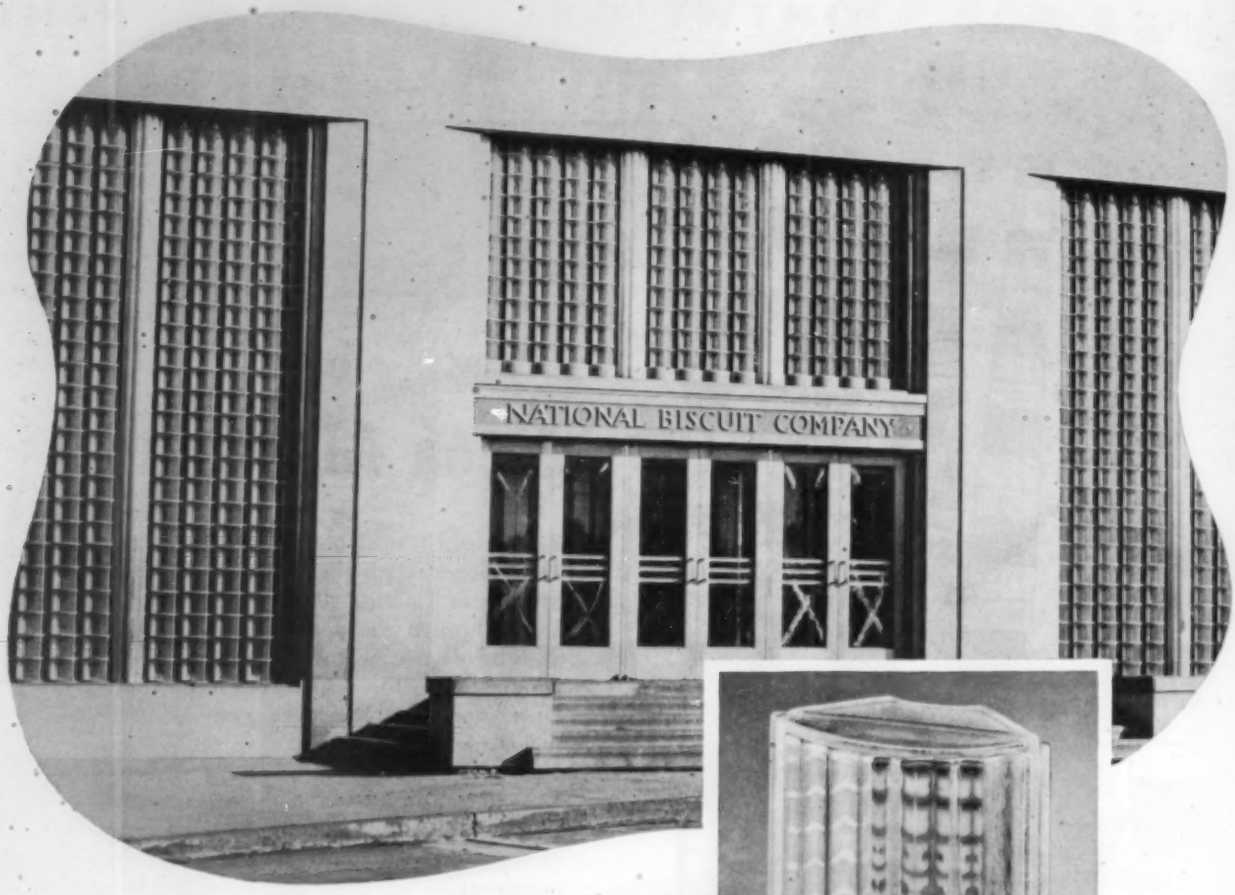

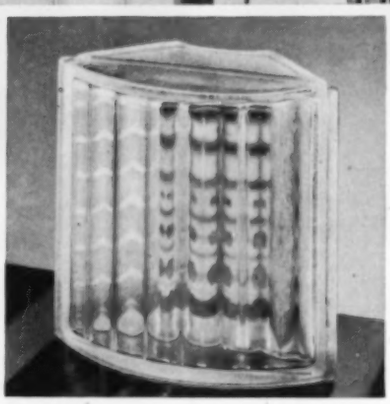

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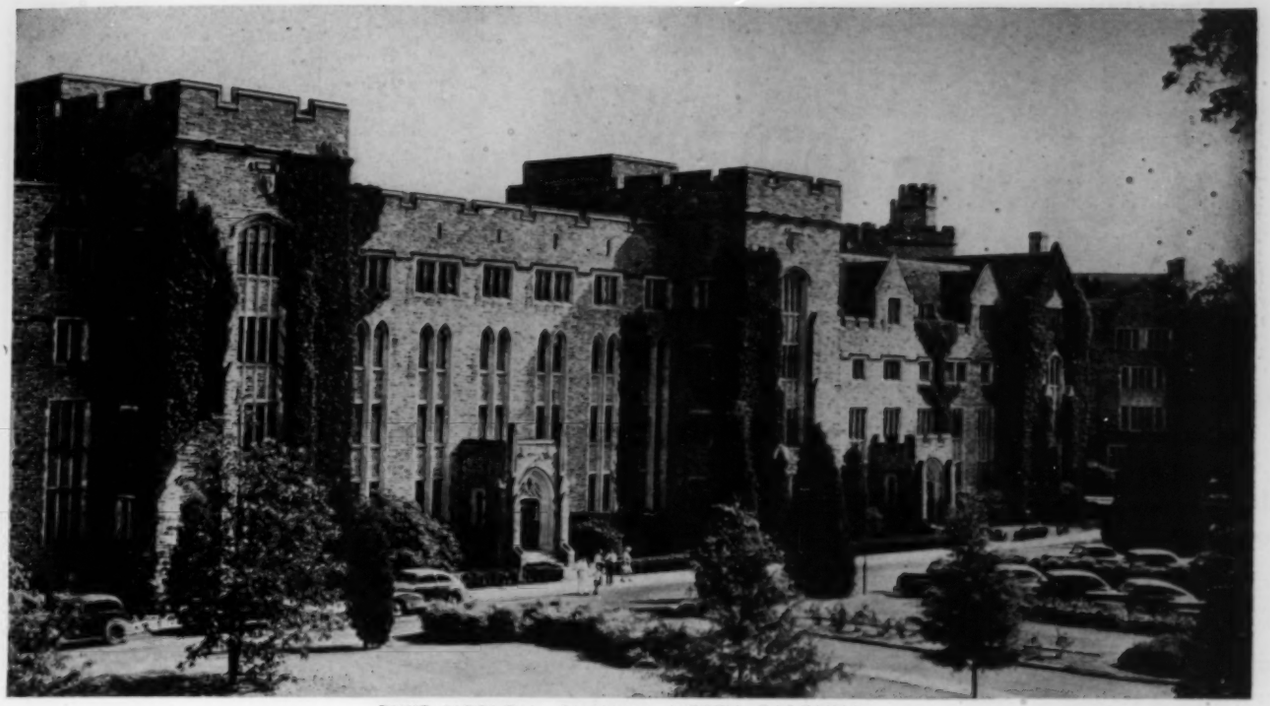

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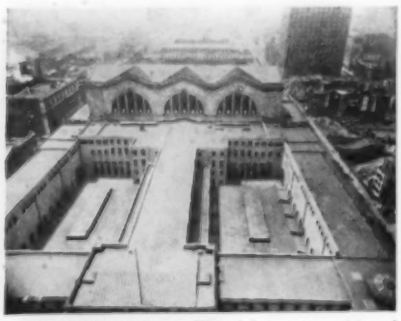
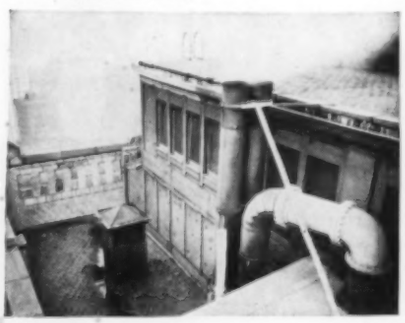
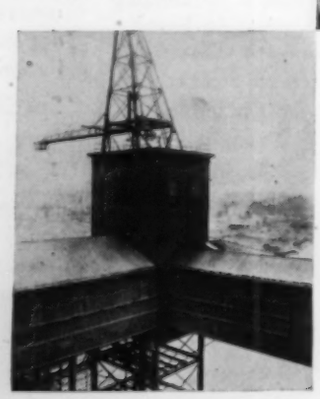
POINTING TOWARD the next 36 years. Roof of the Bankers' Trust in New York. Capflashed with 40,000 square feet of Monel in 1910, it is still in excellent condition. The Monel roof has weathered uniformly, and acquired an attractive neutral gray tone.



37 YEARS YOUNG. This batten type Monel roof on New York's Pennsylvania Station covers an area of 300,000 square feet. It was installed in 1910, shows no visible signs of deterioration today.



SMOKE AND SALT AIR from busy New York harbor have not harmed the Monel penthouse siding shown here, nor the remainder of the 80,000 square feet of Monel sheet metal work installed when the Whitehall Building was erected 36 years ago.



POWER PLANT CELEBRATES 34th anniversary. Window casements, gutters and base flashing of this coal hoist are Monel. 150,000 square feet of economical, long-lasting Monel roofing were installed at the Sherman Creek plant of The Consolidated Edison Co. (New York) in 1913.

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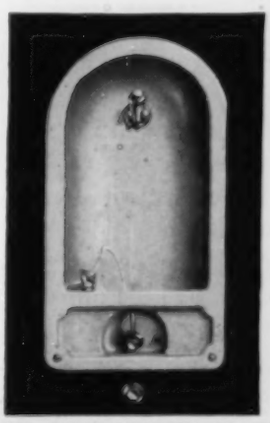

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Don't you hate to see a home owner "bottled up"?

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And in the future, the advantages of coal heat will become even more pronounced—especially when stoker developments and improved local services make coal an "automatic" fuel as well.

So when a client of yours *insists* on some other fuel for his new home, make sure he can turn to coal later on. Don't let his house plans "bottle him up" with his initial fuel choice forever.

Simply be sure that the house plan provides: *(1) A chimney with sufficient flue capacity to burn coal efficiently; (2) Sufficient space adjacent to the heating unit for eventual coal storage and stoker installation.*

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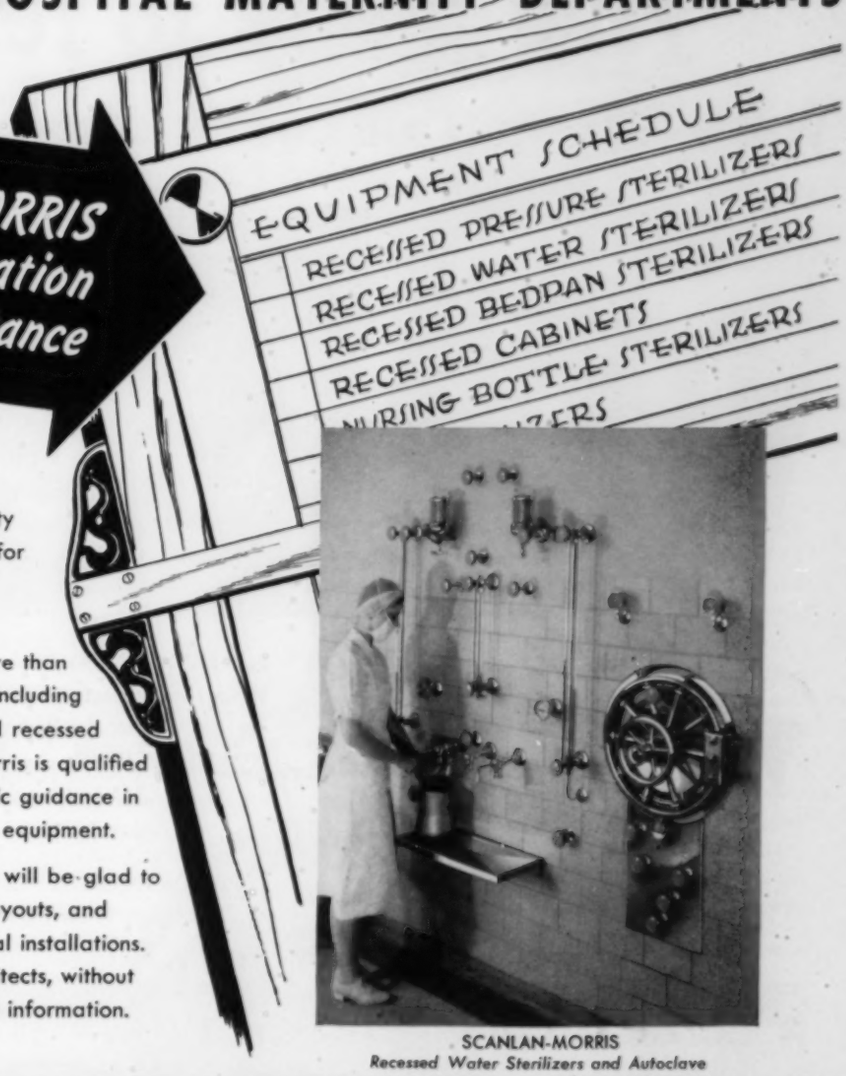

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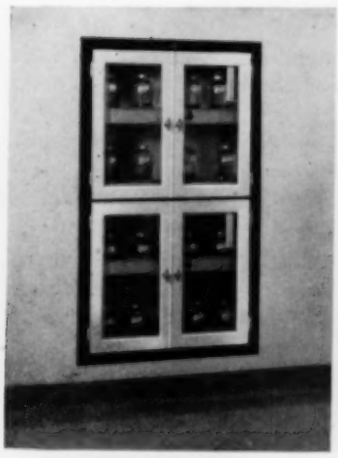

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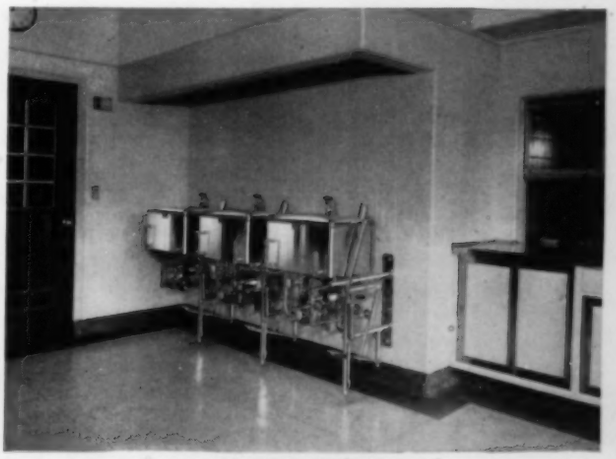

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WHEN YOU PLAN AIR CONDITIONING FOR A RETAIL STORE

1. COOLING*

Not too cold nor too warm —cool comfort even on hottest days.

2. DEHUMIDIFICATION*

Wrings mugginess out of the air. Proper humidity level all year round.

3. CIRCULATION

Air is gently circulated for uniform coolness throughout the conditioned area.

4. FILTRATION

Dust and dirt are removed by large, efficient filters.

5. VENTILATION

Maintains fresh atmosphere by introducing plenty of outdoor air.

Customer comfort, high employee morale, and low cleaning costs are money-in-the-pocket items for your retail store clients. That's why it's a good idea to specify an air conditioning system that will bring him these benefits.

Better Air Conditioning—the General Electric kind—means much more than just cooling. It dehumidifies, circulates, filters and ventilates the air, too.* *All five* features are needed to assure complete client satisfaction.

Work out the design and layout for retail store air conditioning with your General Electric distributor or contractor. He'll have many helpful suggestions.

For summary specifications see Sweet's Architectural File, Section 29A-6. *General Electric Company, Air Conditioning Dept., Section 7446, Bloomfield, New Jersey.*

* *In winter, Better Air Conditioning includes controlled heating and humidification.*

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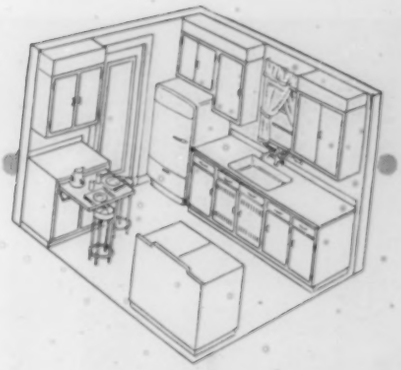
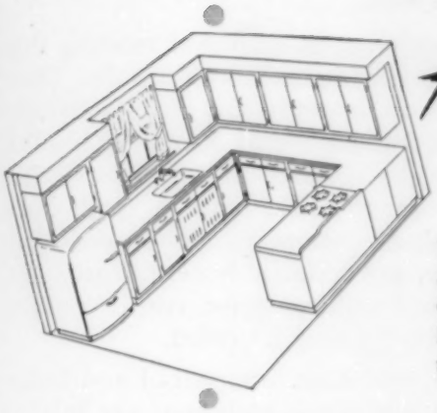
Better Air Conditioning





Any size or shape of kitchen can be a Curtis Kitchen!

Unlimited flexibility in planning kitchens of any size or shape—that's why Curtis sectional kitchen cabinet units help you provide kitchens which fit the owner's needs *exactly.*

There are 21 basic unit types of Curtis wall and counter units—and a total of 75 sizes, not including special cabinet accessories. Yet all dimensions of units are standardized to fit in with other standard kitchen equipment—and all Curtis units fit together to present a modern, streamlined and handsome appearance.

Naturally, Curtis kitchen cabinet units are made of *wood*—for Curtis' experience with thousands of individual kitchens has shown that wood cabinets provide *lasting* satisfaction. All units are furnished prime coated—ready to finish in any color to suit the owner's taste and preference. Let us send you our new 24-page color book "It's Fun to Plan Your Own Kitchen"! Or see your Curtis dealer soon for your copy. Modern, beautifully styled hardware is furnished for each cabinet, to be applied on the job.

When in New York, visit the Curtis Woodwork display at Architects' Samples Corporation, 101 Park Avenue

Curtis kitchen units are designed and constructed to permit installation with the minimum of labor. Expert machining and workmanship produce units which, when bolted together, are firm, square, and perfectly aligned. These cabinets are made like fine furniture—with a combination of quality features found in no other type of cabinets, but true of all Curtis Woodwork for over 80 years. The kitchen here shows a typical installation of Curtis stock wood cabinets.

1866 CURTIS WOODWORK

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I am ☐ Architect, ☐ Contractor, ☐ Prospective Home Builder, ☐ Student.
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In residential design Insulux Glass Block panels open the way to new and flexible plans. Usually dark and gloomy spots are cheerfully lighted with Insulux. One example, the hallway of this San Francisco home is flooded with softly diffused daylight—and full privacy is maintained.

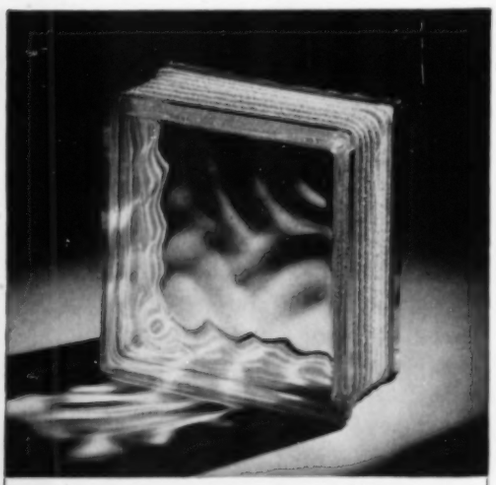
How about daylight and privacy for an apartment lobby? A gracefully curved floor-to-ceiling panel of Insulux was the answer in the Croydon Apartments, Washington, D.C. An occasional washing keeps Insulux fresh, sparkling. Architects: Berla and Abel.

Answer to the call for private daylight

THERE's a definite demand for lighter, brighter living—in residences, in apartments.

A blessing to architects meeting this demand is the ability of Insulux Glass Block to transmit and diffuse daylight while barring vision. Panels of Insulux are easily installed in a manner similar to ordinary brick. Once in place these panels are permanent, high in insulating value, and remarkably easy to maintain. There's nothing to rot, rust or corrode and no painting is needed.

In residences, commercial and industrial buildings, architects are solving problems with Insulux. For complete technical data, specifications and installation details on this versatile, modern material, see the "Glass" Section of Sweet's Architectural Catalog, or address Dept. D-6, Owens-Illinois Glass Company, Insulux Products Division, Toledo 1, Ohio.



OWENS-ILLINOIS

INSULUX

GLASS BLOCK

Insulux Glass Block is a functional building material, designed to do many things other materials cannot do. It is manufactured in three sizes, many functional and attractive face patterns. Investigate!

The Finishing Touch to a Perfect Job

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Immediately Available

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A turn of the lever gives
Needle Spray for ***Stimulation***

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Regular Spray for ***Relaxation***

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Flood Spray for ***No-Splash Rinse***

An Anystream Shower Head will modernize the newest bathroom . . . rejuvenate the oldest shower installation.

Suggestion: Specify the Anystream Shower Head for homes, apartments, schools, hotels, institutions.

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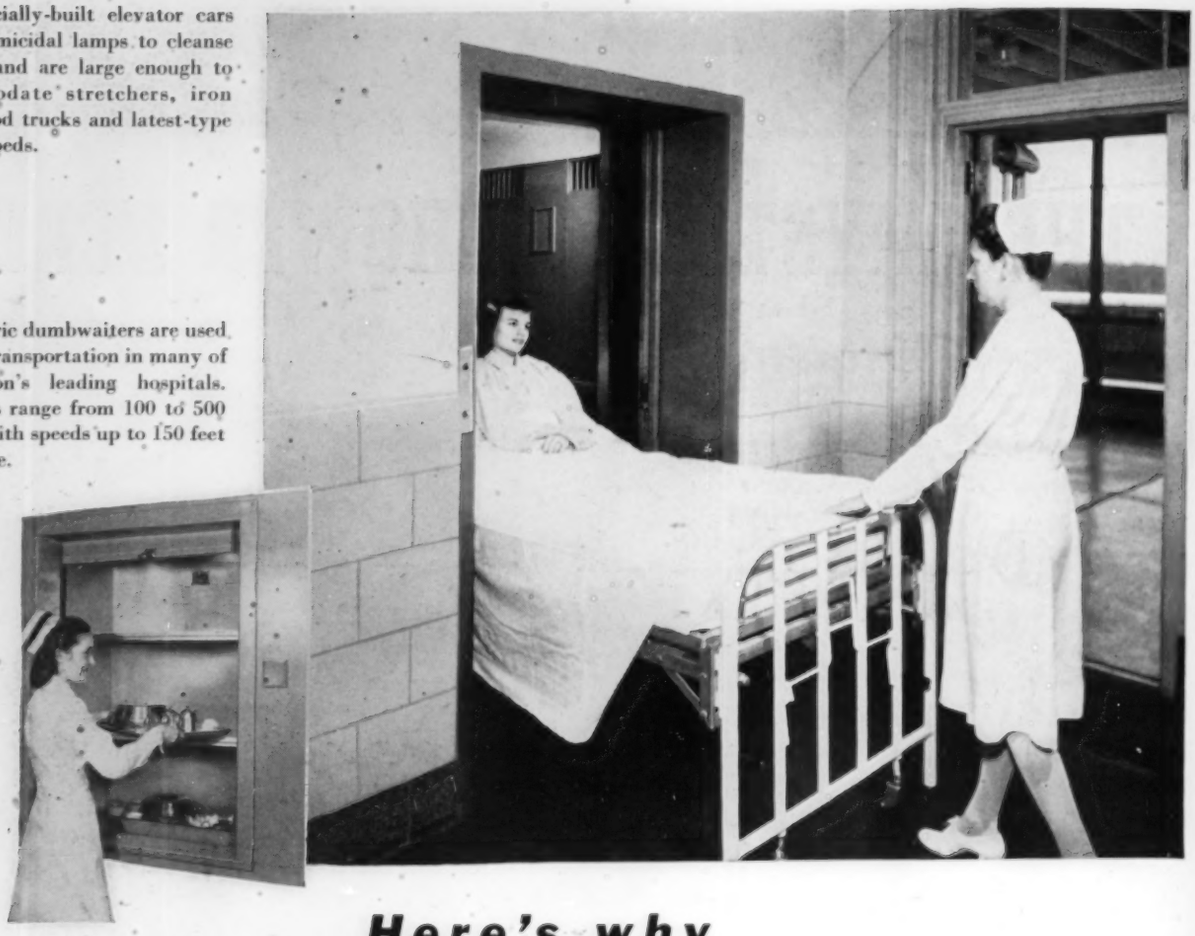
Otis specially-built elevator cars have germicidal lamps to cleanse the air, and are large enough to accommodate stretchers, iron lungs, food trucks and latest-type hospital beds.

Otis electric dumbwaiters are used for food transportation in many of the nation's leading hospitals. Capacities range from 100 to 500 pounds, with speeds up to 150 feet per minute.



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Otis hospital elevators with the "attendant" and "emergency" features are specially designed to serve hospital traffic. During normal periods they can be operated either by an attendant or passengers, and in times of emergency can be taken over by a staff member for the exclusive use of bed patients and stretcher cases.

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Otis **ELEVATOR COMPANY**
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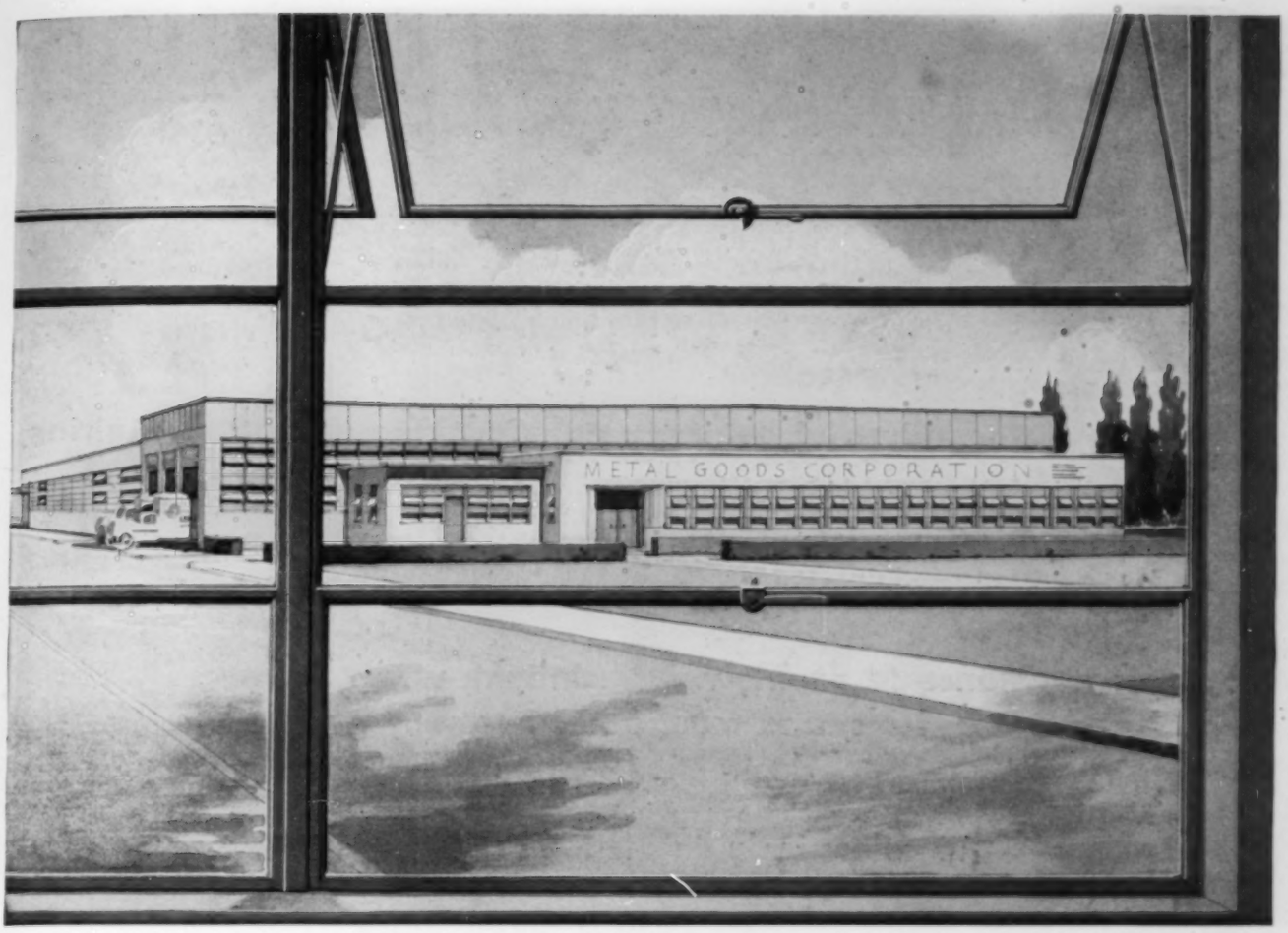

Factory-Office Building of the Metal Goods Corporation, Dallas, Texas. Factory equipped with Lupton Pivoted Windows. Office equipped with Lupton Architectural Projected Windows. Architect: Frank Cann. Engineers and Contractors: Frazier-Davis, St. Louis, Mo.

Streamlined industrial production depends on many things . . . proper daylighting; healthful, well-ventilated atmosphere; pleasant working surroundings. At the Metal Goods Corporation, Lupton Metal Windows promote efficiency by supplying these ideal conditions. In the factory section, Lupton Pivoted Windows, mechanically operated, provide a constant, well regulated, supply of fresh air. Modern appearance is secured for the office section with Lupton Architectural Projected Windows. There is a Lupton Metal Window for every type of building. Write for the new 1947 Catalog or see our Catalog in Sweet's.

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WIRE AND CABLE INSULATION MADE FROM

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Thin coating of insulation

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Be sure to specify wire or cable insulated with GEON in order to get *all* these advantages. Or, for information regarding special applications please write Department N-6, B. F. Goodrich Chemical Company, Rose Building, Cleveland 15, Ohio. In Canada: Kitchener, Ont.

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How striking design effects may be integrated with the dynamic structural strength of Architectural Concrete is shown in this detail of a building corner and plaza approach drawn by Hugh Ferriss. Any design effect an architect may conceive for apartment houses, schools, hospitals, industrial or office buildings may be produced economically in firesafe, rugged, enduring concrete.

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A national organization to improve and extend the uses of concrete...through scientific research and engineering field work

The PLANNING BOARD

For Present Strength and Future Expansion Needs

The Allied Electric Supply Company in Pittsburgh, Pa., needed a new building in a hurry—needed a big floor area to meet present business requirements and also had to plan for future upward expansion of the structure.

Truscon Open Truss Steel Joists and Truscon

The underslung design of the bearing permits maximum head-room under the supporting girders. The open web allows the passage of pipes and conduits in any direction. In practical use, Truscon "O-T" Open Truss Steel Joists are very simple to install, being completely shop fabricated and reaching the job ready for placing. Each joist is marked to correspond with the erection diagram, thus greatly simplifying and speeding construction work.

Allied Electric Supply Company, Pittsburgh, Pa., M. Vo-Shancey, Architect. Branna Construction Co., Contractor.

Truscon Open Truss Steel Joist

Truscon Open Truss Nailer Joist

Open Truss Nailer Joists were designed into the building to assure the rigid, fire-resistant, economical and light weight construction required. The Open Truss Steel Joists were used for the first floor, and the Nailer Joists were used for roof construction. The front bay of the Allied Electric Supply Company structure is designed for a future second floor, and the Truscon Steel Joists used assure this expansion without alterations.

Advantages of the Truscon "O-T" types of steel joists are many. Fundamentally, the Truscon "O-T" Open Truss Steel Joist is a Warren truss having top and bottom chords of wide tee-shaped members and a plain round continuous web member. The bottom chord is continuous from end to end of joists and bent up at the ends to form the bearings. Steel joists are fabricated by means of electric machine welding under pressure, making positive connections at all joints.

Other features include fire-and-vermin-resistance, sound resistance, ease of installing pipes and conduit within the floor depth, and several more important advantages.

A specialized feature of the Nailer Joist is the wood nailing strip securely attached to the top chord.

Write for free illustrated catalog giving complete information on Truscon Open Truss Steel Joists and Nailer Joists.

First All Resistance Welded Steel Joist

The Truscon "O-T" Open Truss Steel Joist was the first all resistance welded steel joist on the market. These joists were used in building the Grant Building, Pittsburgh, Pa., world's tallest building with Open Truss Steel Joist Floor Construction.

The Truscon Planning Board says, "Normal delivery on many of our Steel Building Products is now possible. In fact, on all material for which raw material is readily available, a normal rate of production and delivery is currently in effect." However, since production and delivery schedules change from week to week, we suggest you contact the nearest Truscon sales office for the latest information.

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There are scores of smart room designs possible with the Truscon Series 138 Double-Hung Steel Window. The wide range of window openings in single, twin, triple and panoramic combinations inspires unusual window treatments, resulting in rooms and entire structures of appealing architectural beauty.

Several improvements are now embodied in the Series 138 Window, making it better, heavier, stronger than ever before. Write for free illustrated catalog showing complete range of types and sizes.

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There's a range of Truscon Steel Doors to meet every type or size needed in any type of structure, from 2' 7⅜" industrial swing type for residences, garages, manufacturing buildings, etc., to great mechanically operated doors for airplane hangars with openings of hundreds of feet in width. The types include swing and slide industrial doors, two-section vertical lift doors, two-section turnover doors, accordion doors, crane and canopy doors, pier doors and hangar doors. Write for details.

New Literature

A complete reprint of the 72-page insert in SWEET'S, covering all types and sizes of Truscon Steel Windows, with their installation details, is available on request.

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"Something Better Has Come to Light" in distinctively styled, efficiently engineered lighting.

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MANUFACTURERS OF FLUORESCENT AND INCANDESCENT LIGHTING EQUIPMENT
DISTRIBUTED BY BETTER ELECTRICAL WHOLESALERS EVERYWHERE

NO ENTRANCE BOTTLENECK HERE

Ellison BALANCED DOORS

facilitate the smooth, effortless flow of entrance traffic. Entry or exit is not retarded by the necessity of tugging or pushing. They open easily with only finger tip effort, because they are "BALANCED" an exclusive ELLISON feature that equalizes the door weight and entrance wind pressures. This permits the door to swing easily and quickly to one side of the door opening. Counter balanced they require only a slight, effortless spring action to close.

Equally as important is the fact that ELLISON DOORS are so pivoted top and bottom that they swing on a shorter radius, reducing the normal projection 40 to 45%. ELLISON BALANCED DOORS are furnished, ready to install, in complete prefabricated units, including the door, frames, mullions, trim, saddles and necessary hardware. They may be had in a wide range of standard sizes, and types in bronze, aluminum, stainless steel or full panel glass, or built to your specifications.

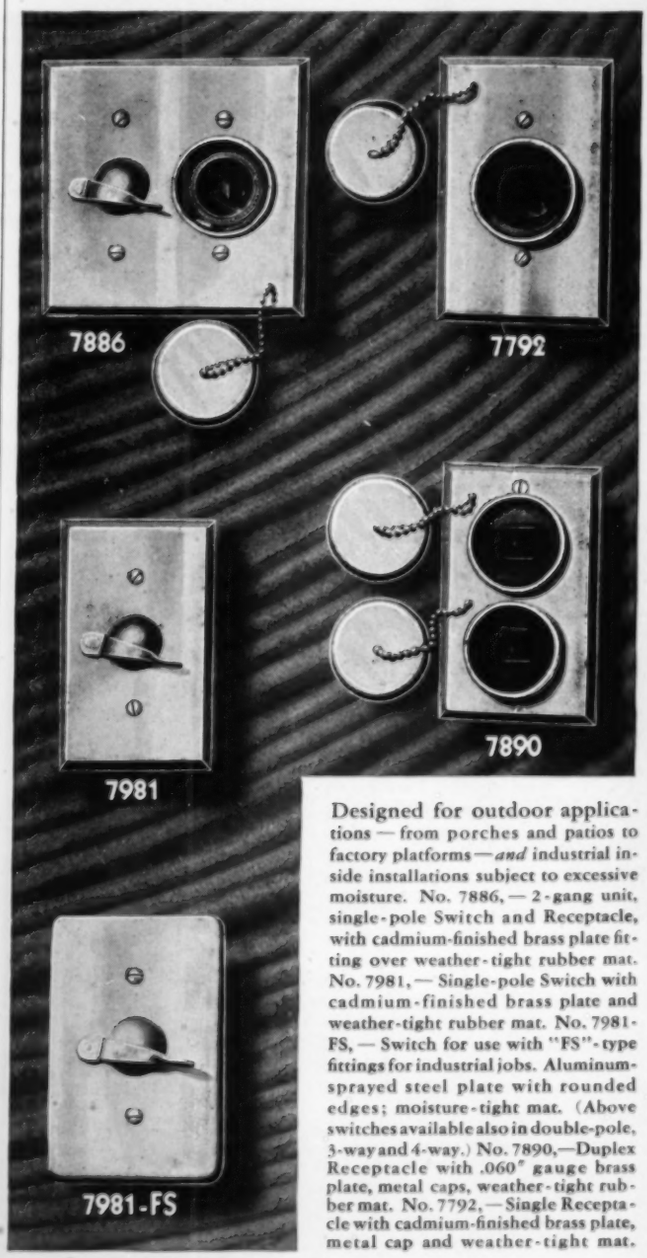
Write for our new 12-page booklet giving additional specifications and illustrating types, or see our section in SWEET'S

ELLISON BRONZE CO., INC.
JAMESTOWN, NEW YORK

Representatives In All Principal Cities

Ellison
BALANCED DOORS

H&H WEATHER-PROOF
OUTDOOR SWITCHES AND RECEPTACLES



Designed for outdoor applications — from porches and patios to factory platforms — *and* industrial inside installations subject to excessive moisture. No. 7886, — 2-gang unit, single-pole Switch and Receptacle, with cadmium-finished brass plate fitting over weather-tight rubber mat. No. 7981, — Single-pole Switch with cadmium-finished brass plate and weather-tight rubber mat. No. 7981-FS, — Switch for use with "FS"-type fittings for industrial jobs. Aluminum-sprayed steel plate with rounded edges; moisture-tight mat. (Above switches available also in double-pole, 3-way and 4-way.) No. 7890,—Duplex Receptacle with .060" gauge brass plate, metal caps, weather-tight rubber mat. No. 7792, — Single Receptacle with cadmium-finished brass plate, metal cap and weather-tight mat.

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CORRUGATED TRANSITE* . . . *for utility, beauty, or both*

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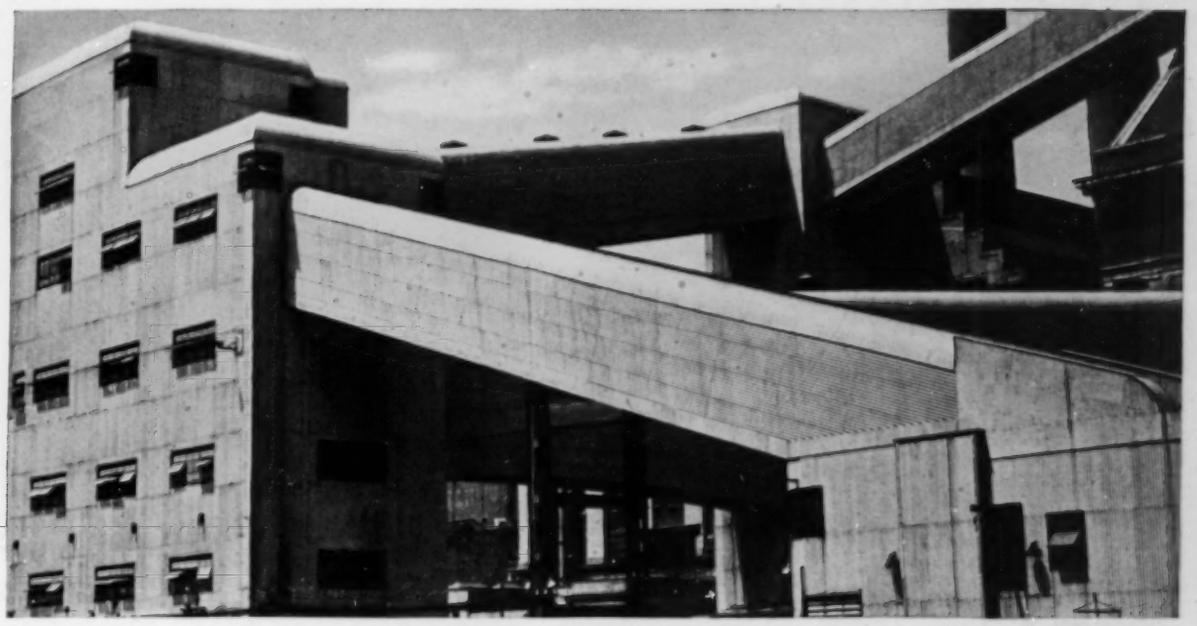

Architects and engineers are using Johns-Manville Corrugated Transite in many ways to get that modern streamlined effect. Transite sheets can't rot, rust, or burn. And they're low in cost . . .

The smartly styled art gallery above gets some of its unusual charm from the same rugged Corrugated Transite that provides durable roofs and sidewalls for all types of industrial and commercial buildings.

Whether the project is to provide a fireproof, weatherproof exterior for a power plant or to glamorize an art gallery, Johns-Manville Corrugated Transite is *right* on the job. Use it inside, outside . . . on both new or remodeled structures.

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EASY TO SAW

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Now—
Heavy Duty Molded SAFETY

Step Treads in marbleized blue-gray and tan patterns give appealing beauty with long-lasting service. . . . MELFLEX SAFETY Treads are molded ⅛ inch thick of special "frictioned" rubber compound to cover both the tread and step-edge. Approved by Underwriters Laboratories, Inc. (No. SA 833) as a SAFETY feature, this molded tread applies without requiring metal strips or screws. It stays "put", won't buckle or blister when applied simply with MELASTIC Water-Proof Cement to wood, stone, metal or composition steps. . . .

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It cushions step edge as well as provides sure-gripping tread safety, *wet* or *dry*. These Treads, also available in black compound, may be applied on inside or outside steps with equal safety and service.

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not just radiant heating . . .
not just convection heating . . .

BUT A BLENDED COMBINATION OF BOTH!

that's what Modine Convector Radiation offers you!

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See those arrows coming from that Modine Convector Panel beneath the window? They represent *radiant heating* — mild, radiant heat in just enough quantity to offset heat loss from window areas. But that's not all . . .

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To this — Modine Convectors add *convection heating*. Hot water or steam, circulating through copper heating unit, draws floor-line air into bottom of convector where it's warmed, rises, and is then gently circulated through the room.

RESULT: Blended, combination heating for modern living comfort — that's what Modine Convector Radiation offers today's moderate cost homes and apartments! In addition, you get *individual* room control that responds almost instantaneously to sensitive automatic controls — plus gentle, continuous air circulation without the use of moving parts that wear out. Yes, think of the dependable heating comfort, distinctive charm, space-saving, and long service life of Modine Convector radiation for your heating needs. Look for Modine's nearby representative in the "Where To Buy It" section of your phone book. Write for descriptive literature. MODINE MANUFACTURING COMPANY, 1773 Racine Street, Racine, Wisconsin.

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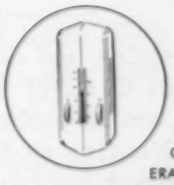

CLOSE TEMPERATURE CONTROL

EASY TO INSTALL

ADDS TO LIVING SPACE

PRICED FOR TODAY'S HOMES AND APARTMENTS

Modine

CONVECTOR RADIATION

The Modern "proved by use" heating method

CALDWELL NEW SASH BALANCES

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THEY are more economical than any other method of counterbalancing double-hung windows . . . take only one-third the time of installation required by sash weights . . . result in a considerable saving in lumber and labor in the construction of frames.

They effect an important saving in freight cartage and handling. Labor cost reduced to the minimum. Tonnage reduced over 75%. They eliminate entirely box frames, weight pockets, weights, cords and pulleys, and permit the use of very narrow mullions and trim.

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Specify LIFETIME CHROME by Gerity

Gerity styling *and durability* get the enthusiastic O. K. of architects, builders, dealers, and the public! Gerity accessories smartly blend into modern bathrooms of any color scheme. It's *Lifetime Chrome*—won't break, crack, peel, check or tarnish. Write for catalog. Gerity-Michigan Die Casting Co., Adrian, Mich. Plants at Detroit and Adrian.

★

Hospitals must have reliable heating

—and to this architect that means Petro

RELIABLE heating — important in any building — plays an even more vital role in hospitals. It can't be taken for granted. To those concerned with hospital heating, the day-in-and-day-out dependability of Petro oil-fired systems makes an especially strong appeal. For a Petro couples uninterrupted operation with low-cost performance, cleanliness, and a definite contribution to the health and comfort of occupants.

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INDUSTRIAL MODELS: No. 5 or No. 6 fuel oil; manual, semi-automatic or automatic operation; 8 sizes to 450 bhp. Thermal Viscosity preheating.

DOMESTIC MODELS: No. 3 or lighter oils; conversion and combination-unit types, 7 sizes. Patented "Tubular Atomization."

FULL DATA on Petro Industrial Burners are in catalog files of Sweet's and Domestic Engineering. Details on Petro Domestic Burners available in separate catalog. Copy of either sent gladly on request.

J. Hunter Field, New York architect, formerly of the firm of Cross & Cross, has selected Petro equipment for most of his buildings. One of these is the Nassau Hospital in Mineola, Long Island, where the central heating plant serves the 250-bed hospital, the laundry, the nurses' home and seven other buildings. Another is the Harlem Savings Bank at 181st Street and Broadway, New York, consisting of the bank facilities, shops and a large restaurant.

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RUSCO ALL METAL, SELF-STORING, COMBINATION SCREEN AND STORM SASH is the first patented, practical insulating sash for homes and commercial buildings that offers all these advantages:

Screens, storm sash and weatherproofing—all in one permanently installed unit—with NOTHING TO CHANGE, NOTHING TO STORE;

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Greater economy on ⅓ less fuel.

When you specify RUSCO . . . you assure your client the ultimate in convenience, comfort, safety and economy.

Details of Rusco Window Insulation are in Sweets 18a-14, or you can obtain literature for your files by sending coupon.

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But, in the hue and cry of this strenuous period of post-war adjustment there is one grave danger. We must not only build, we must also build durably and well.

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Lime plaster is one of those materials that have served us for centuries. Yet no better material for finishing walls and ceilings has so far been devised. Its monolithic character is without equal. It is durable and fire-resistant. So don't "cut corners" the wrong way. Only a first class plastering job takes care of walls and ceilings, and of all the corners the right way.

When it comes to a choice of finishing lime consider the brands shown here, long known for consistent quality, always uniform, scientifically processed from the world's purest dolomitic limestone. Look for the red zig-zag stripes, your guarantee of quality.

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In this structure, as well as in hundreds of other attractive buildings which are now moving skyward, Bethlehem Structural Shapes continue to meet the requirements of architects and contractors who plan and build with steel.

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STRUCTURAL
SHAPES

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MINWAX TRANSPARENTS, CAULKING COMPOUNDS and WEATHERCAP

Among the precautions necessary to keep hospitals and other masonry structures in "good health" is protection against the ill effects of weathering.

For this purpose, Minwax manufactures a line of protective products which have been selected by leading architects and engineers for over 35 years. Among these products are the following which meet the needs in the great majority of cases.

MINWAX TRANSPARENTS
Clear type • Colorless type

Special penetrative liquids which protect without objectionable change in the color of the surface and with no effect on the surface texture.

MINWAX CAULKING COMPOUND

Designed to seal the joints around window and door frames; also as an elastic seal for any masonry joint. Resistant to moisture, heat, cold, smoke, fumes. Bonds to wood, stone, steel, glass, etc. White, Gray, Buff.

MINWAX WEATHERCAP

An extruded strip of pure soft lead, consisting of a cap member with anchor projecting into the joint filled with Minwax Caulking Compound. For joints in copings, cornices, belt courses and steps, and around windows and glass blocks.

For full information see Sweet's or write Minwax Company, Inc., Dept. A6, 11 West 42nd Street, New York 18, N. Y.

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Weathercap • Protective Coatings • Caulkings

A COMPLETE WATERPROOFING SERVICE

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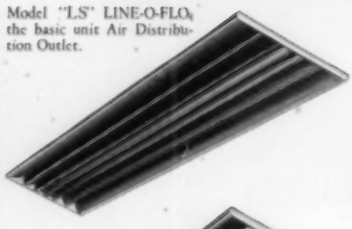
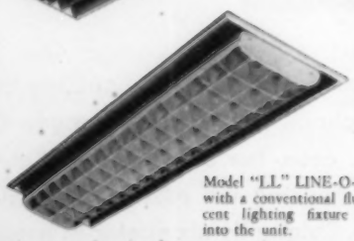
AIR DISTRIBUTION OUTLETS

Keyed to Modern Architectural Concepts.....
A Fitting Counterpart of Linear Lighting.....
A Vital Contribution to Continuity of Design.....

Model "LS" LINE-O-FLO, the basic unit Air Distribution Outlet.





Model "LL" LINE-O-FLO, with a conventional fluorescent lighting fixture built into the unit.

LINE-O-FLO Air Distribution Outlets have been developed as a matching counterpart for the continuous-strip type of interior lighting and decoration. LINE-O-FLO units can be used singly, end-to-end in continuous strips, or alternating with lighting fixtures. Lighting units can be attached directly to the LINE-O-FLO units, to produce a single strip providing both illumination and air distribution.

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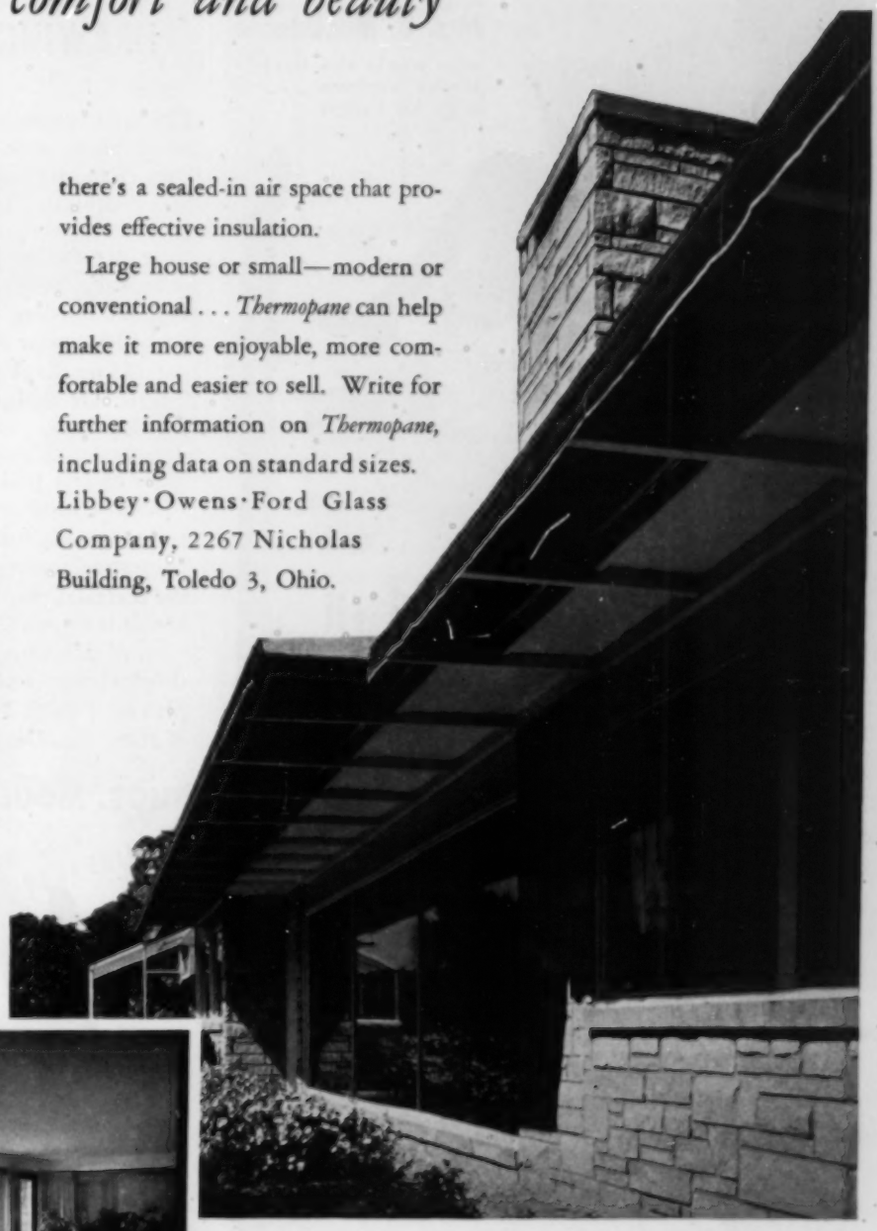
CONTROLLED SUNSHINE...

for year-round comfort and beauty

In this attractive house of Mr. and Mrs. H. M. Sloan of Glenview, Illinois, Architect David S. Barrow added the beauty and spaciousness of the outdoors to indoor living. He provided the extra comfort and economy of solar heating with window walls of *Thermopane,* the complete multiple-pane insulating unit.

All year the beauty of the landscape is enjoyed with indoor comfort. In summer, the *Thermopane* units, shaded from the direct rays of the high sun, help keep the house cooler. In winter, sunshine floods the room, warming the walls, floors and furnishings. *Thermopane* helps keep this heat in, for between its two panes there's a sealed-in air space that provides effective insulation.

Large house or small—modern or conventional . . . *Thermopane* can help make it more enjoyable, more comfortable and easier to sell. Write for further information on *Thermopane,* including data on standard sizes. Libbey·Owens·Ford Glass Company, 2267 Nicholas Building, Toledo 3, Ohio.



● The overhang is carefully calculated to admit sunshine in winter and keep it out in summer. Notice how the shadow falls along the sill in this summer picture—a shorter overhang being used for the bedroom windows with higher sills at the right. The canvas portion of the overhang is removed in winter to permit the heat-giving rays of the low winter sun to enter.

ONLY LIBBEY·OWENS·FORD MAKES

Thermopane

REG. U.S. PAT. OFF.

L O F

LIBBEY·OWENS·FORD

a Great Name in **GLASS**

"Can I Afford Them?"

asks

Mrs. D. MacDuncan

who wants the best in window hardware . . . IF it fits her budget

134,445,000 modern-minded people share her interest

Grand Rapids Invizible Sash Balances are sold monthly to the readers of these magazines . . . the bulk of the home-building market.

She is interested in

GRAND RAPIDS *Invizible* SASH BALANCE

The practical SPIRAL sash balance

Of course she can afford them! They go in quick and easy . . . just three screws per balance . . . save hours of high-priced labor. Laboratory tests point to perfect lifetime performance . . . proved in thousands of homes. No tapes, no cables, no exposed tubes, no corrosion. The one practical installation for modern narrow trim. A few standard sizes fit 95% of all residential requirements . . . same size balance fits upper and lower sash.

For complete specifications and instructions

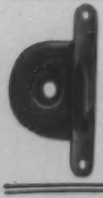
SEE OUR CATALOG IN SWEET'S

Write today for fully illustrated specification and installation data. See how Grand Rapids Invizibles fit into your next set of plans!

GRAND RAPIDS HARDWARE COMPANY

Grand Rapids, Michigan

Quality Leaders in Sash Hardware for 50 Years



Grand Rapids Sash Pulleys

No. 103 face plate, cone bearing type and Nos. 175, 109, 110 sawtooth drive type sash pulleys cover 95% of all sash pulley requirements.

Moultile Floor Beauty

AMPLY FULFILLS YOUR DRAWING BOARD CONCEPTIONS

The artistic effects which you visualize are fully achieved by Moultile, with its clear, rich colors, subtly interwoven with crisp, distinct veining. The satisfaction of seeing your ideas faithfully carried out is never lacking.

Consider the fact that the individual tiles may be arranged in an unlimited variety of patterns. Use plain fields, with or without borders, or conventional checkerboards, if you wish. Plan your floor with panels, strips or bands, either parallel or diagonal. Vary the pattern with spots or other inserts. Or design an original maze, meander or woven pattern.

Your clients will enthusiastically approve Moultile floors . . . for their beauty, for their quiet, foot-friendly comfort, and especially for their time-defying durability. Since both colors and texture are uniform throughout the thickness of the material, hardest wear leaves no noticeable marks on Moultile floors. Costly periodic refinishing is never necessary. Maintenance is easy and inexpensive, and even the original cost is surprisingly low. Write today for free samples to: THOS. MOULDING FLOOR MFG. CO., 165 W. Wacker Dr., Dept. AR-6, Chicago 1, Ill.

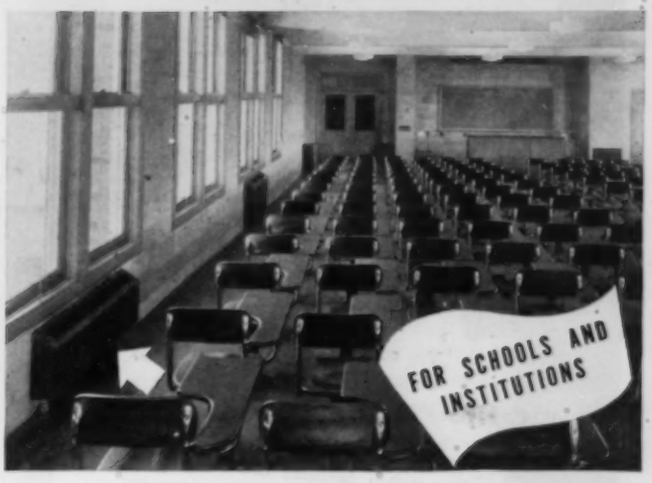
THOS. MOULDING

Moultile

Flexible-Reinforced
MASTER ASPHALT TILE

This attractively patterned Moultile floor lends charm to the lobby of the Oaks Hotel, Excelsior Springs, Mo. • A. C. Rindskopf, Designer

"STREAMAIRE" CONVECTORS ARE *Growing in Popularity*



● An increasing number of architects and contractors are specifying "Streamaire" Convectors because they give extras that spell heating satisfaction. "Streamaire" Units are highly efficient and truly economical. They respond instantly to modern thermostatic controls . . . are engineered to circulate warm air by controlled convection, to level off temperature peaks by natural radiation. "Streamaire" Convectors are easy to specify, easy to install because they're standardized in four types, packaged individually to prevent damage. To aid quick identification, cartons are clearly marked with model number and size. "Streamaire" Cabinets, painted to harmonize with any interior, enhance the beauty of modern decorative themes. For convenience, fronts are removable for cleaning.

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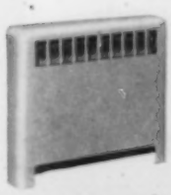
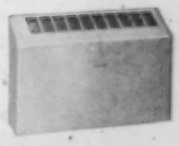
Have you sent for your copy of the new "Streamaire" Convector Catalog? It will give you up-to-date details on the Young line and it includes ratings, specifications and other helpful data.

FOUR "STREAMAIRE" STYLES MEET EVERY NEED

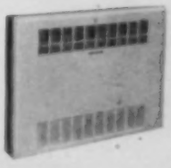


◀ FREE STANDING, Type C—Saves on installation costs—no wall recesses are required.



WALL HUNG, Type WS—Sloping top grille prevents careless blocking of air circulation. ▶

◀ WALL HUNG, Type W — Heating element accessible by easily removed one-piece panel.



PARTIALLY RECESSED, Type S—Special "Z" bars permit installation before or after plastering. ▶

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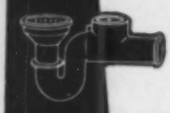

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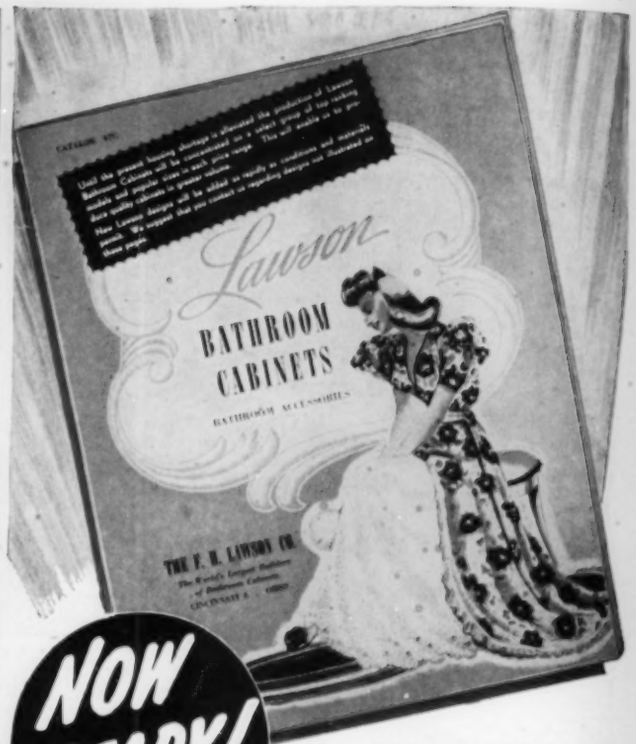

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Lawson BATHROOM CABINETS

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Again Lawson takes the lead in smart styles and top values. Since 1816 Lawson Products have been made to give the greatest satisfaction to every purse and plan.

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Lawson BATHROOM CABINETS 131 YEARS OF QUALITY Lawson

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INCLUDE J&L JUNIOR BEAMS IN YOUR PLANS

Order Now

FOR FIRE-RESISTANT STEEL AND CONCRETE FLOOR CONSTRUCTION

SAVES LUMBER*

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Stairway to Safety

Alundum Stair Tile Guarantees Permanent Non-slip Surface

ALUNDUM Stair Tile (and Floor Tile) is recommended to architects by Norton Company for an important function: to overcome both the slipping hazard and the excessive wear of stairs, ramps and floors subjected to severe foot traffic. Its ability to withstand the most concentrated traffic — without lessening its non-slip effectiveness or showing appreciable wear — has been substantiated by installations that have given 25 years of service under the severest conditions. ALUNDUM Tile always provides reliably safe walkways. It retains its non-slip advantage when wet. No amount of traction will smooth its surface, reduce its non-slip protection.

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ALUNDUM—Registered trade-mark for Norton Company's aluminum oxide abrasive.

NORTON *non slip* ALUNDUM FLOORS

See our catalog in Sweet's

If it's got to be seen, do it with Seaporcel!

SEAPORCEL gives the architect an artist's palette for color, the sculptor's clay for contour.

Sparkling ceramic *fused* to steel at 1550° F., SEAPORCEL* can be fabricated to *any* shape, form, section . . . finished in *any* shade, from purest white and pastels to deepest black.

Light in weight, SEAPORCEL combines stiffness with strength, is fireproof, easily handled, quickly erected. Shortages do not faze SEAPORCEL—wood blocking or light porcelain iron furring provide all support necessary.

And, thanks to multiple coating of enduring ceramic *fused* to steel, SEAPORCEL will never crack, fade, corrode. Through the years, it remains clean, *lustrous.*

SEAPORCEL is equally adaptable to broad and dramatic sweep for building facades, store fronts, interiors of public buildings, restaurants, banks, schools, hospitals, hotels. Make your final word on your next preliminary sketches: SEAPORCEL!

WRITE TODAY for bulletins showing applications and current jobs.

SEAPORCEL PORCELAIN METALS, INC.
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"Member Porcelain Enamel Institute, Inc."

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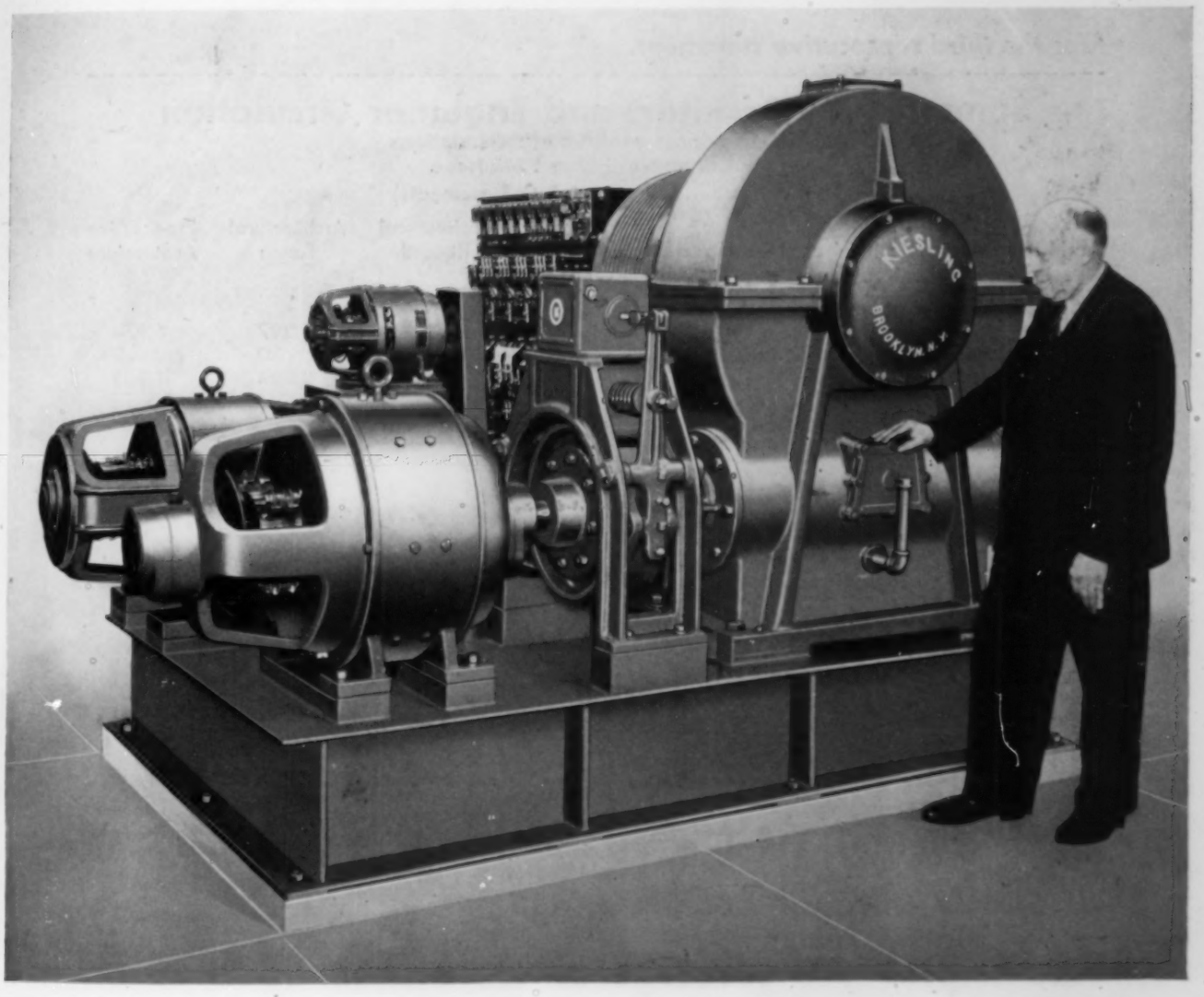
Standard Capacities Up to 40,000 Lbs.



KIESLING Heavy Duty Elevator Hoisting Machine with motor generator set and variable voltage control. Hoisting machine, direct current brake, and variable voltage control-board designed and manufactured by JOHN W. KIESLING & SON, INC.

BROOKLYN **ELEVATORS** NEW YORK

AGAIN* latest A.B.C. statements show that ARCHITECTURAL RECORD is

FIRST in architect circulation!
FIRST in consulting engineer firms!
FIRST in total architect and engineer circulation!

*For the third consecutive statement.

Summary of Architect and Engineer Circulation

From business analysis of subscriptions based on November 1946 issue
(December 31, 1946 A.B.C. Statements)

	Architectural Record	Architectural Forum	Progressive Architecture
Architectural, architectural-engineering firms and architects and architect-engineers in private practice:			
Subscriptions in company name, owners and corporate executives	**8,194**	6,297	6,974
General managers and managers	**8**	30	7
Registered staff architects	**1,829**	2,024	1,931
Total architect circulation shown	**10,031**	8,351	8,912
Consulting engineering firms and engineers in private practice:			
Subscriptions in company name, owners and corporate executives			
Civil	**1,028**	646	446
Electrical	**86**	106	30
Mechanical	**159**	151	56
All other	**163**	152	77
Total	**1,436**	1,055	609
General managers and managers	**10**	29	3
Staff engineers	**3,433**	3,871	2,303
Total engineer circulation shown	**4,879**	4,955	2,915
Total architect and engineer circulation shown	**14,910**	13,306	11,827

ADD to that the lowest cost per page per thousand architects and engineers reached.

And a provable coverage of more than 80% of all building plans and specifications prepared by architects and engineers.

NOTE: *In the second half of 1946 and the first five months of 1947 the RECORD carried more advertising than any other architectural publication.*

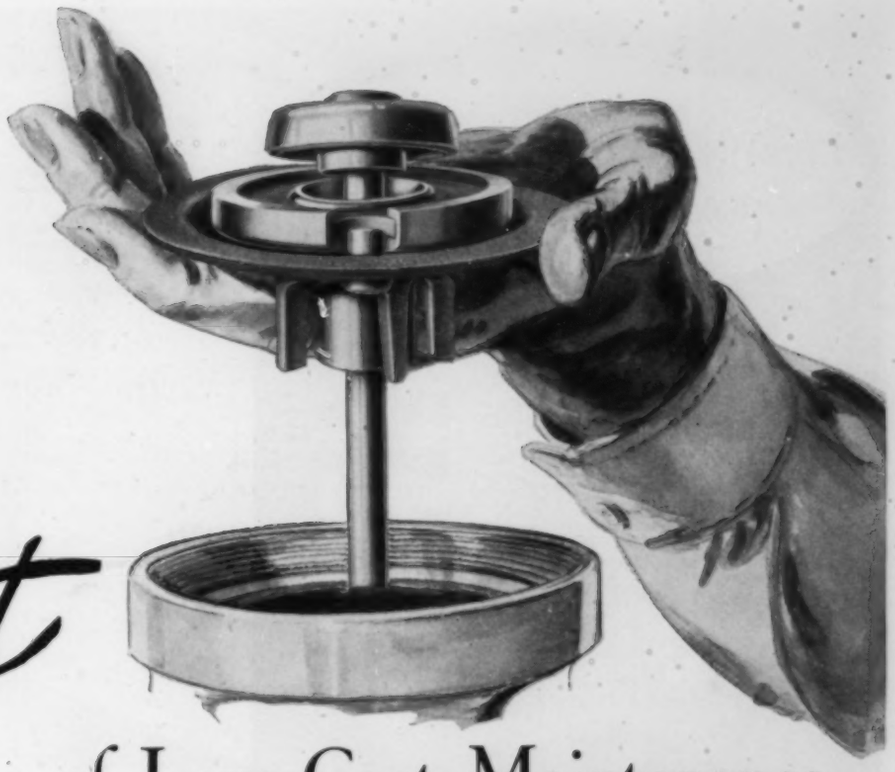
"WORKBOOK OF THE ARCHITECT-ENGINEER"

119 WEST 40th STREET, NEW YORK 18, N. Y.

F.W. DODGE CORPORATION

This advertisement also appears in PRINTERS' INK

Only 6 moving parts, the simplest assembly of any flush valve and the quickest and easiest to repair.



the Secret —of Low Cost Maintenance is in the Utter Simplicity of DELANY VALVES

It is a known fact that **DELANY FLUSH VALVES require less service, over longer periods, but do you know why? There is but one component part subject to maximum wear and tear—the tough leather diaphragm, made to take long and constant use. The other functional parts are loose-fitting and hence free from friction and all wear and tear. A New Diaphragm, when needed after 5 to 10 years, costs little. Its replacement is accomplished quickly and easily, and regains instantly the initial efficiency of the DELANY FLUSH VALVES.**

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FLUSH VALVES · VACUUM BREAKERS · PLUMBING SPECIALTIES

PresTile National Advertising pre-sells your clients

EACH month, through Better Homes & Gardens, American Home and other magazines, more and more homemakers are learning about the advantages of using Prestile . . . the quality tileboard with its plastic beauty baked in. While we are striving to meet overwhelming demand, Prestile continues to advertise as an aid to dealers, contractors and architects.

PRESTILE MANUFACTURING COMPANY
2860 LINCOLN AVE., CHICAGO 13, ILL.

PRESTILE
"Its Plastic Beauty is Baked In"

GET A HEAD START

No matter what your job is, you can't afford to let your neighbor beat you to the gun.

Whether you're an artist, office worker, designer or technician, you want the best—and the best means KOH-I-NOOR.

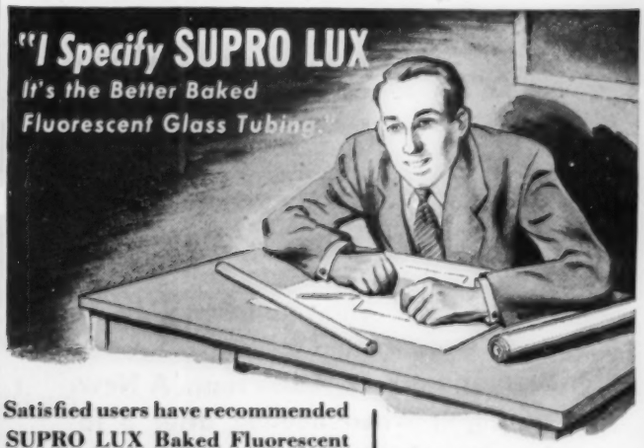
When you work with a fine, smooth, KOH-I-NOOR Drawing Pencil, the advantage is all yours, because you know that KOH-I-NOOR is the Right Pencil for your Job!

KOH-I-NOOR
The RIGHT Pencil For Your Job

Send for Leaflet No. 3

KOH-I-NOOR
The RIGHT pencil for the RIGHT job
KOH-I-NOOR PENCIL COMPANY, INC., BLOOMSBURY, NEW JERSEY

"I Specify SUPRO LUX
It's the Better Baked
Fluorescent Glass Tubing"



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A SPECIAL SERVICE
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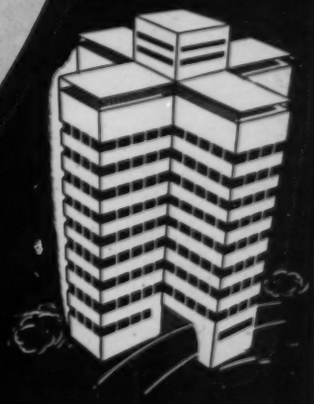

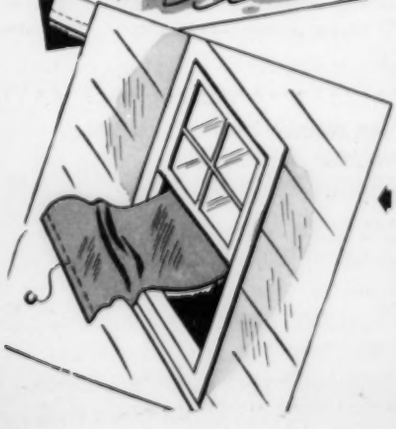

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HERE'S WHY "TONTINE" SHADE CLOTH OFTEN GIVES UP TO 20 YEARS' SERVICE

Deep into the fibers of the fabric, the pyroxylin is driven. This chemical—a liquid form of cotton—is soaked up by the cotton fabric as a sponge soaks up water, then it hardens. Thus the two become, in effect, one material.

Pyroxylin is washable—it is impervious to water, rain, grime and dirt. When a shade made with "Tontine" becomes soiled, it can be scrubbed with soap and water, then rehung fresh and clean as ever. Service records show that "Tontine" can be scrubbed—vigorously—20 times or more without damage! And colors resist fading, stay bright for the life of the shade.

Resists cracking and pinholing. "Tontine's" pyroxylin impregnation gives it a protective finish that resists cracking and pinholing. And it gives maximum resistance to fraying and ripping. Constant improvement of all these qualities through the years makes today's "Tontine" one of the best values in its field.

Cut maintenance costs and improve the appearance of your buildings by specifying practical, washable "Tontine" for *all* window shades. Its durability has been proved by service records which show that window shades made from "Tontine" Shade Cloth have been in use up to twenty years—have been washed more than twenty times—and are still giving service.

An economical washing and repairing service can be arranged by your authorized "Tontine" dealer. The shades will look bright, clean, and new. E. I. du Pont de Nemours & Co. (Inc.), "Tontine" Sales, Newburgh, N. Y.

*"TONTINE" *is Du Pont's registered trade mark for its pyroxylin-impregnated* washable *window shade cloth.*

DU PONT "TONTINE"

WINDOW SHADE CLOTH

Looks Better Longer

DU PONT

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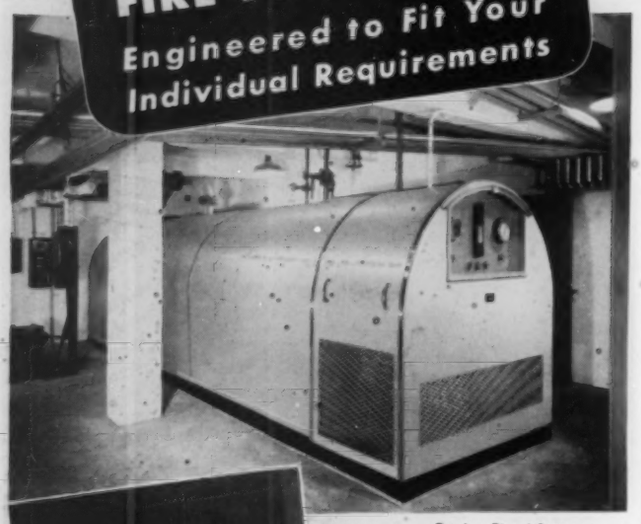
BETTER THINGS FOR BETTER LIVING

. . . THROUGH CHEMISTRY

CARDOX FIRE PROTECTION

Engineered to Fit Your Individual Requirements



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750 lbs. CO_2

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750 lbs. CO_2 . . . 32 gal. Foam solution

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Whether the hazard or combination of hazards calls for *500 pounds* or *125 tons* of Cardox CO_2, a single Cardox System . . . with its compactly designed, centrally located Storage Unit—can be engineered to meet the *specialized* or *varied* fire problems involved. Cardox Mobile Units for indoor or outdoor protection put wheels under 750 pounds to 3 or more tons of carbon dioxide for instant use in any part of the property.

Utilized individually or in planned combinations, Cardox Fixed Systems and Mobile Units have given new scope to all the recognized advantages of CO_2 fire protection. Write for Bulletin 1567 and recommendations for Cardox engineered protection for the tough fire hazards that worry you.

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CO_2 FIRE EXTINGUISHING SYSTEMS

EMPLOYMENT OPPORTUNITIES AVAILABLE

WISCONSIN FIRM of Architects have opening for several experienced draftsmen. Work consists of schools, churches, mercantile and industrial buildings. Golfing, and in close to good fishing. In applying give experience and salary expected. Box 238, ARCHITECTURAL RECORD, 119 W. 40th St., New York 18.

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THERE ARE many exceptional opportunities for graduate architectural and architectural design draftsmen in Philadelphia, Harrisburg nearby Southern States that will pay anywhere from ninety to one hundred and thirty-five dollars per week, and we have a large number of definite leads. Write Executive Employment Service, Technical Department, 37 South 13th Street, Philadelphia 7. 'Phone Locust 7-2828.

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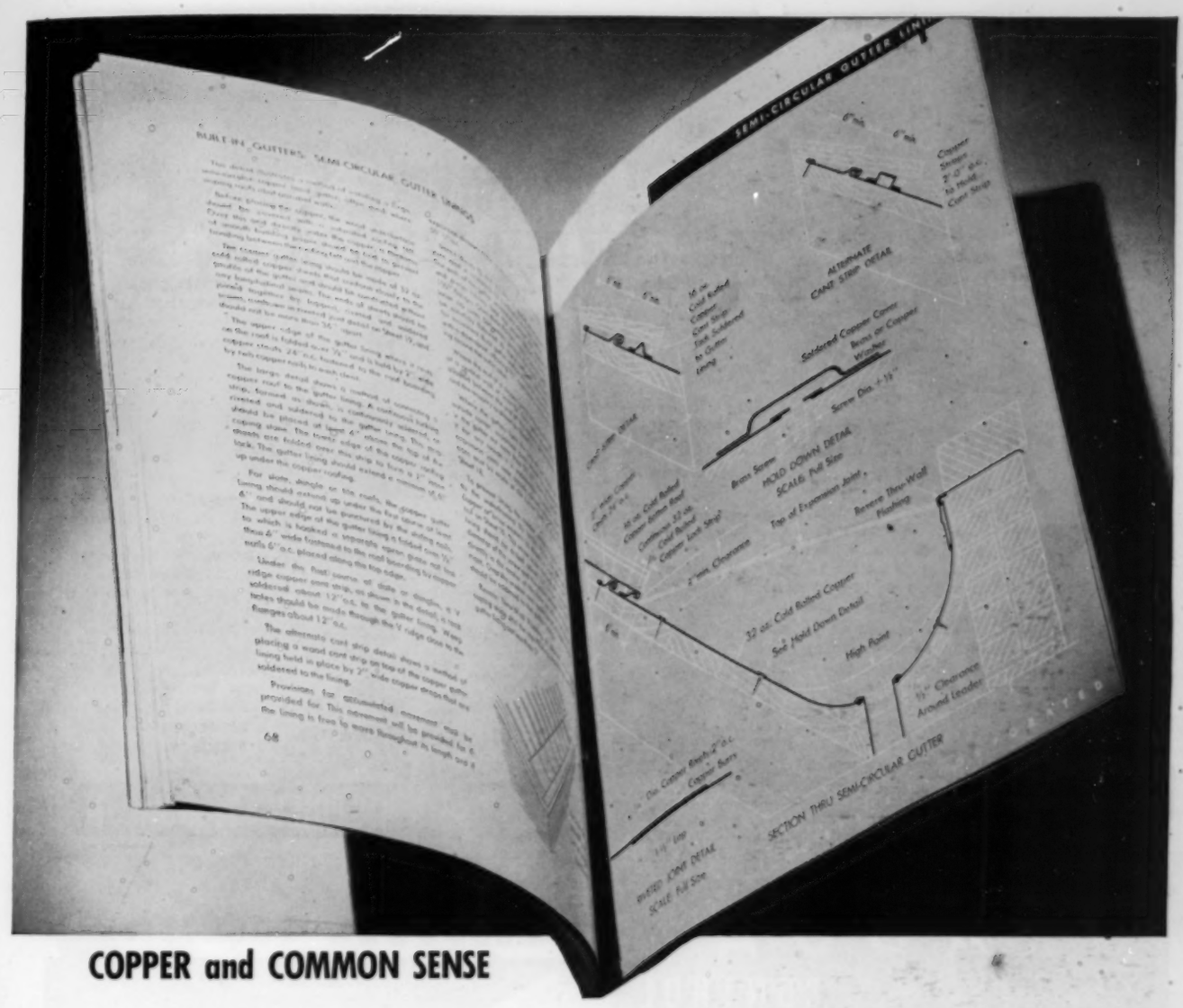

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QUESTION: What's the best way to install semi-circular gutter linings?

ANSWER: Detail Sheet 19, Pages 68 & 69 in "Revere's Manual of Sheet Copper Construction*"

A QUICK SOURCE of reference for busy men, Revere's 96-page manual of sheet copper construction* is based entirely on authoritative new data provided by Revere's sheet copper research. The new principles it covers show how stress failures can be avoided through engineering design.

In the few months since it was published, this book has become the standard reference for leading architects and sheet metal experts in all parts of the country. That is because the facts it covers are important to every one concerned with better sheet copper construction, and are presented in the form of large, clear charts that are easy for practical men to use.

Copies of this book are now in the hands of all holders of Sweet's Architectural File, and of leading sheet metal contractors. We urge you to use this book, to turn to it first in all matters of sheet copper construction. It covers every phase of the subject—roofing, gutters, flashing—in full detail. For any further assistance, feel free to call on the Revere Technical Advisory Service, Architectural. Revere building products are sold only through Revere Distributors.

* "Research Solves Problems of Stress Failures in Sheet Copper Construction."

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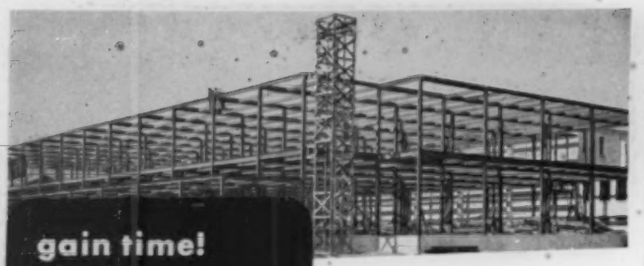

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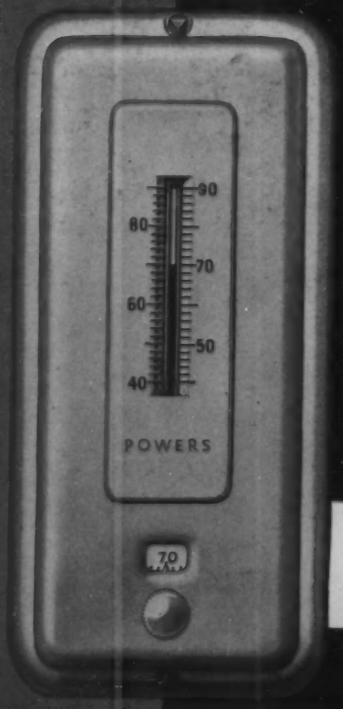

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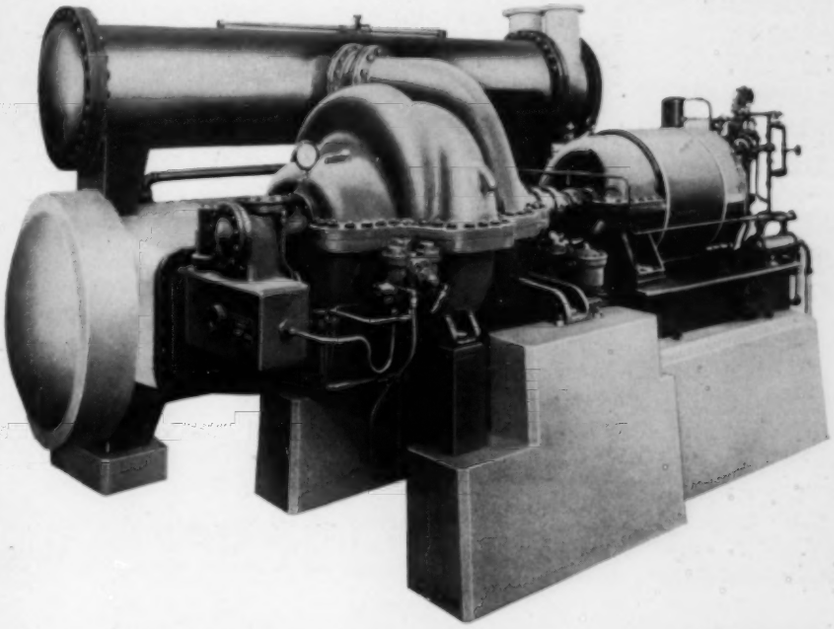
Worthington Pump & Machinery Corporation, Harrison, New Jersey



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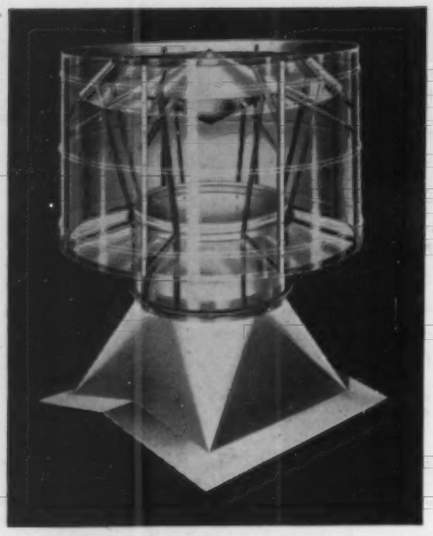

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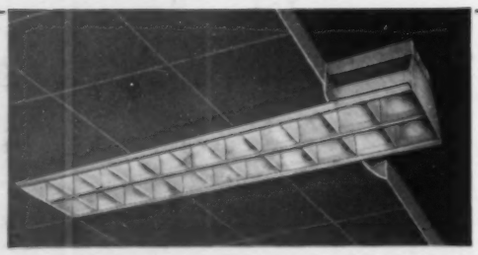

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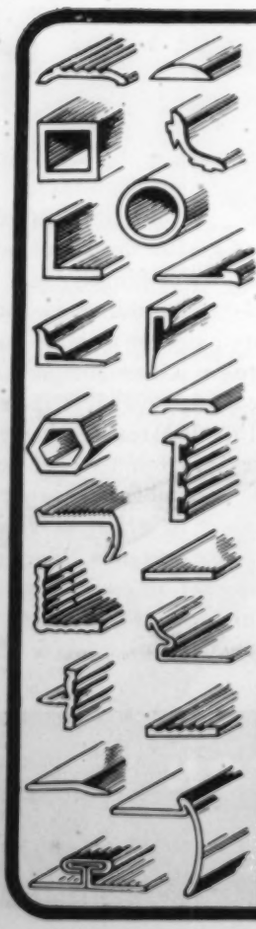

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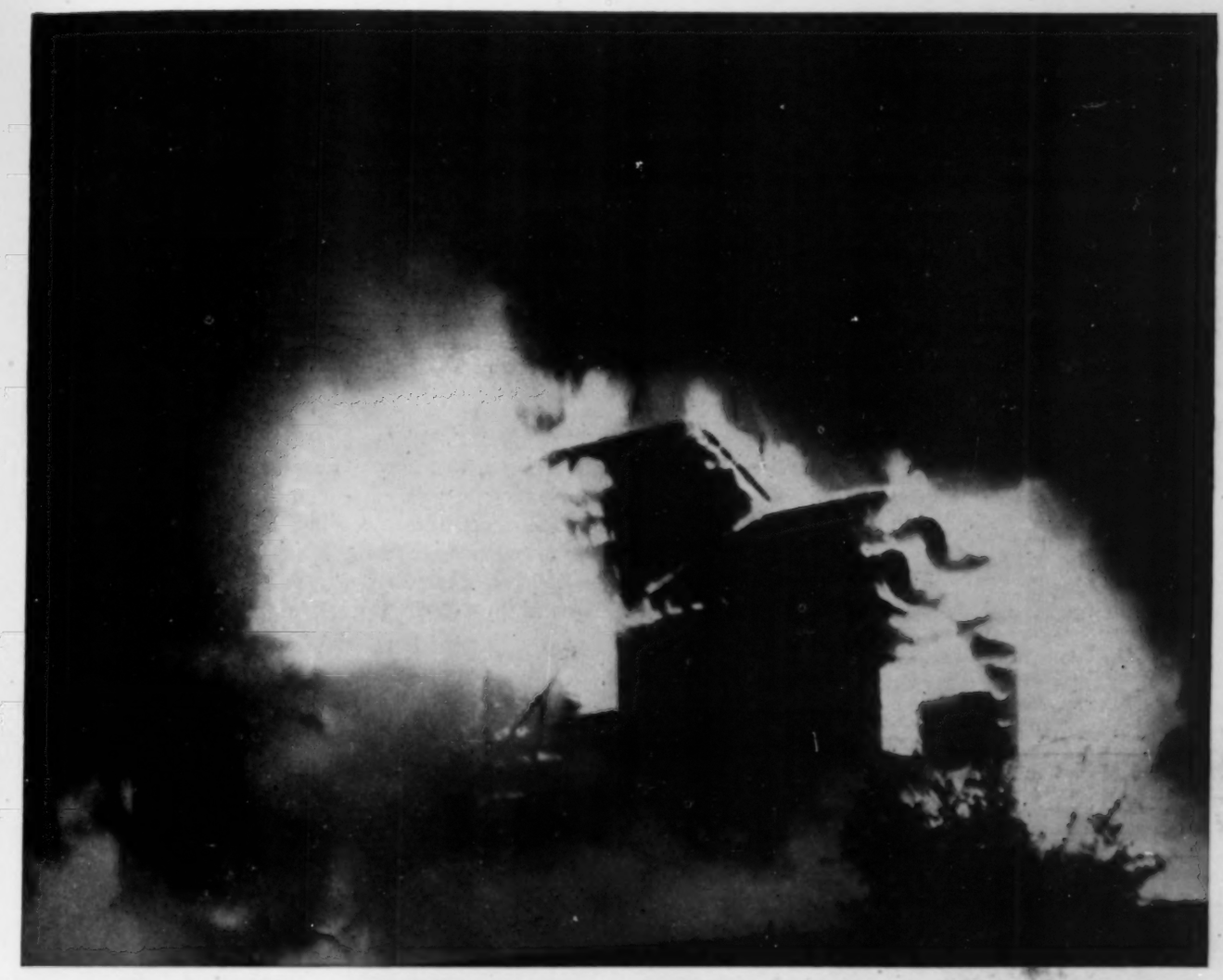

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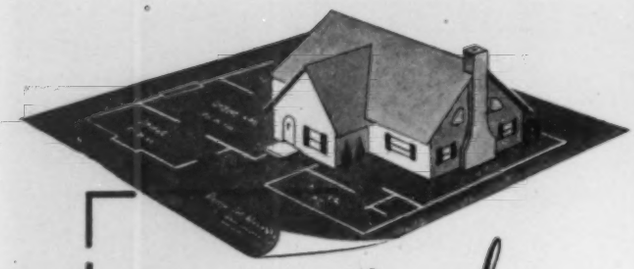

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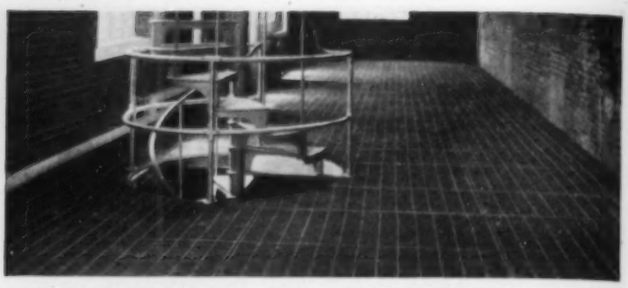

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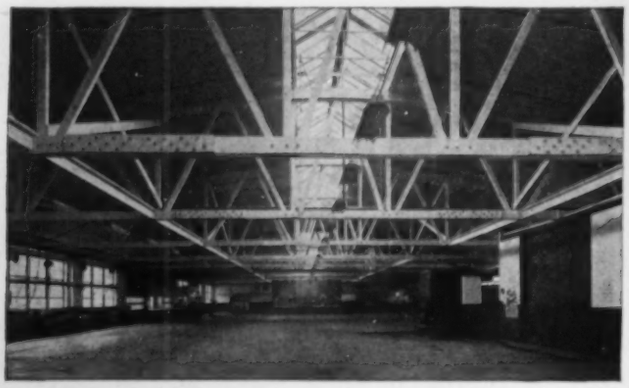

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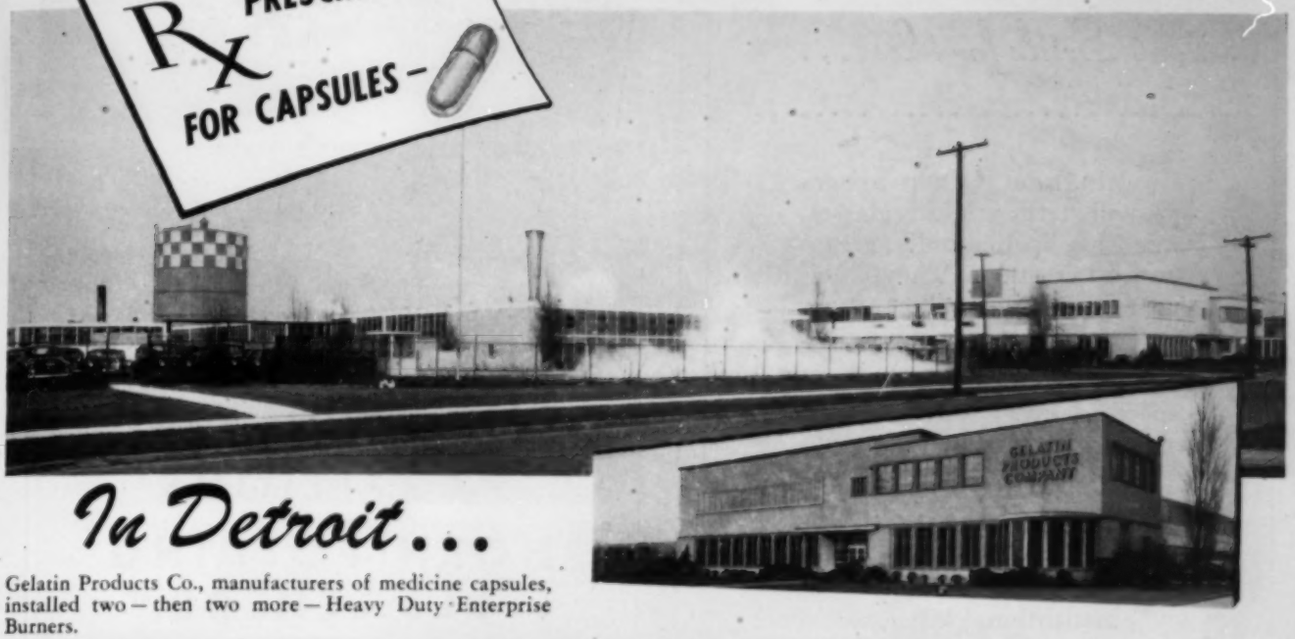

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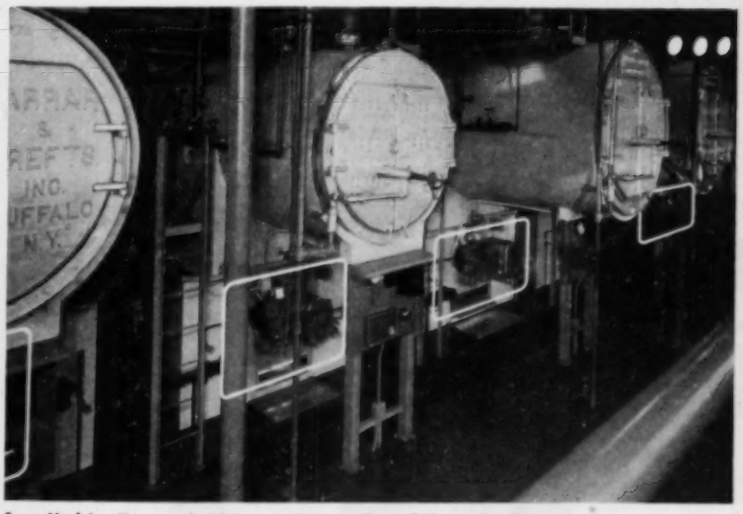

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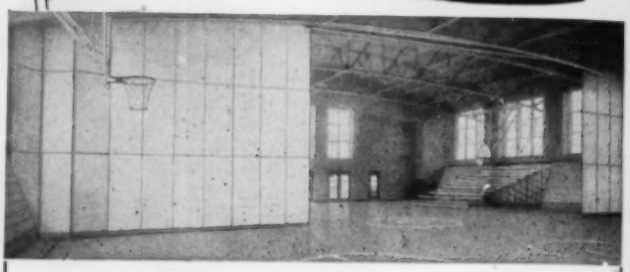

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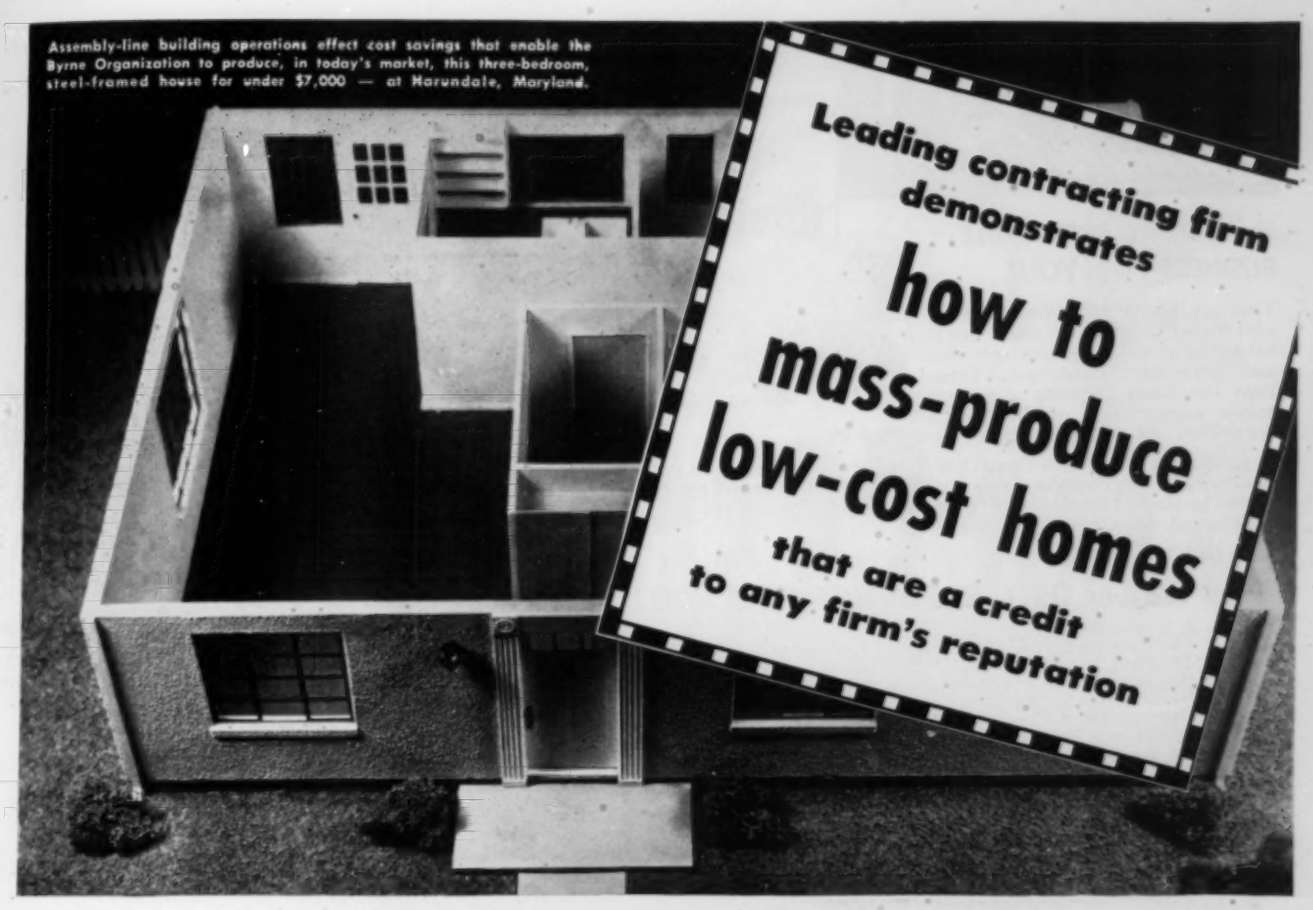
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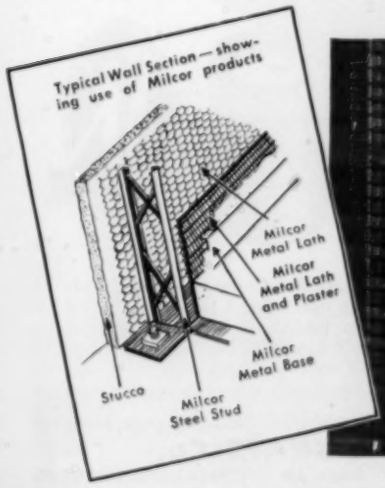
Consult the Milcor Manual in Sweet's, for data that helps you apply these and other Milcor Steel Building Products to your particular problems.


Typical Wall Section — showing use of Milcor products
Milcor Metal Lath
Milcor Metal Lath and Plaster
Milcor Metal Base
Stucco
Milcor Steel Stud

Left: Tying Milcor Metal Lath to Milcor Steel Stud — in a Harundale home. Note the use of Milcor Corner Bead, to protect the straight-edge beauty of plaster corners.

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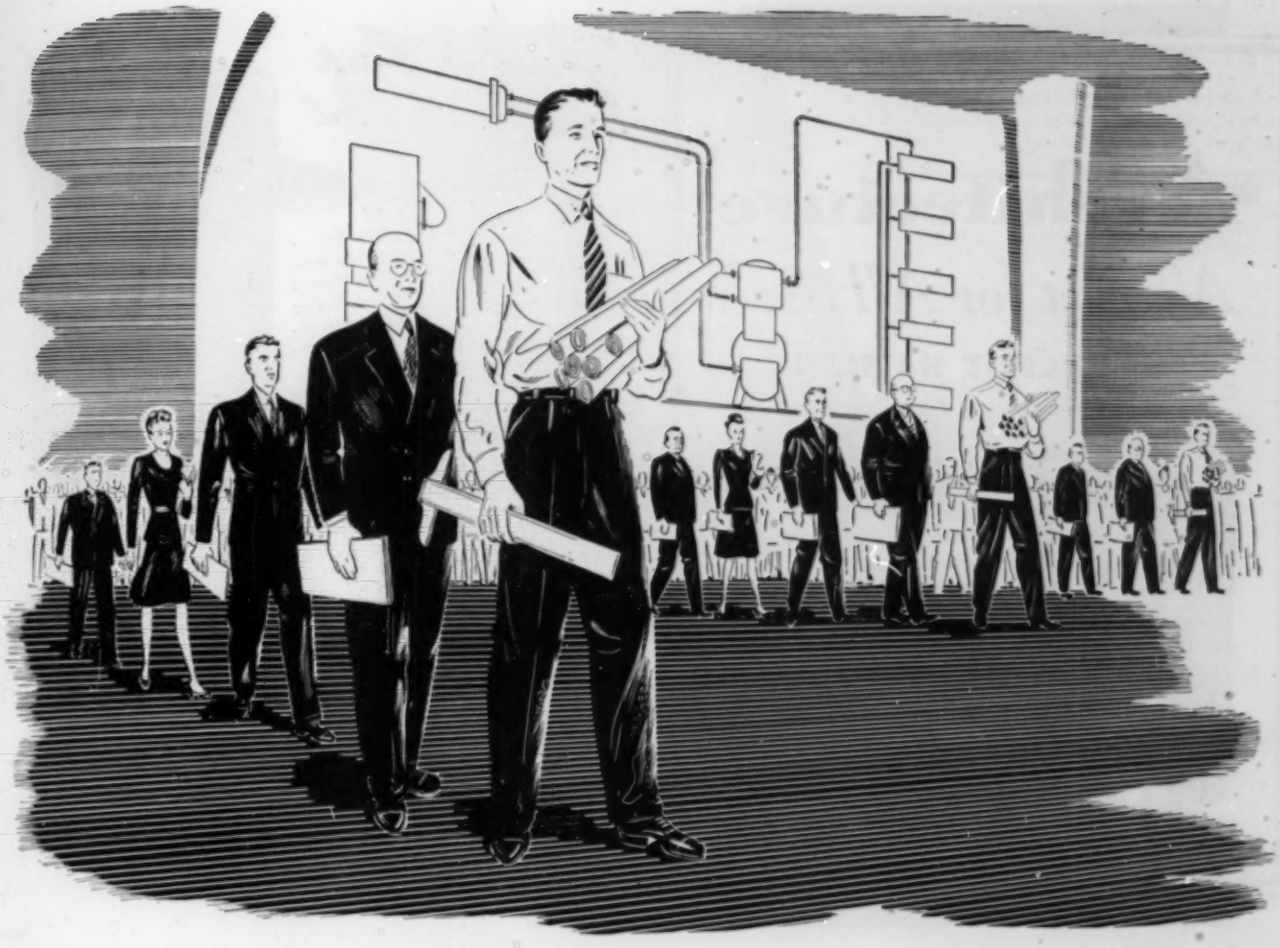

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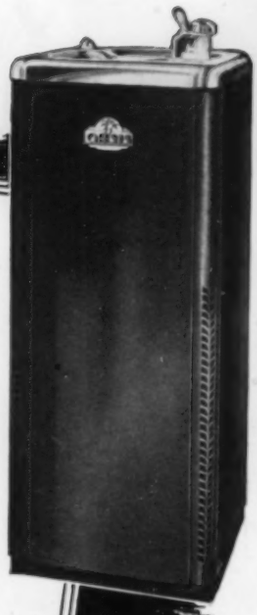

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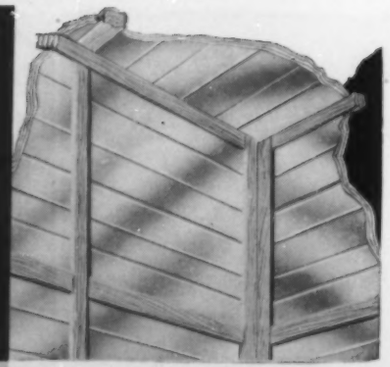

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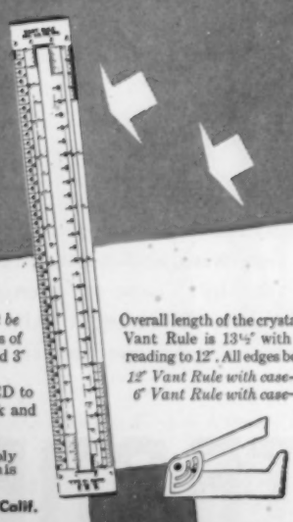

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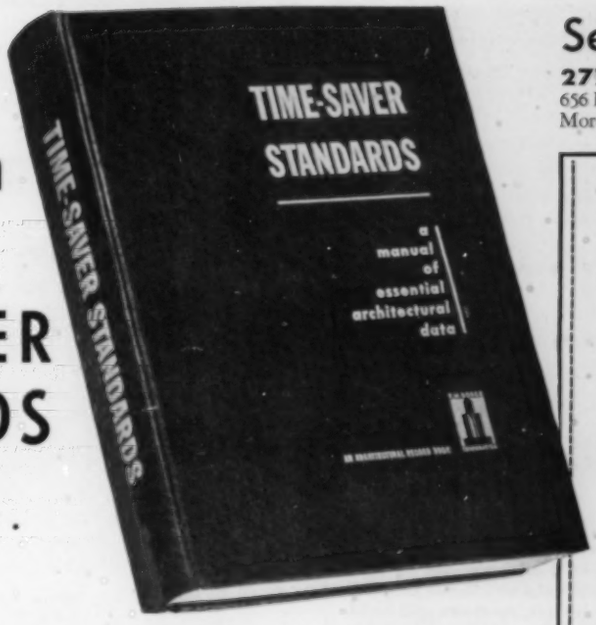

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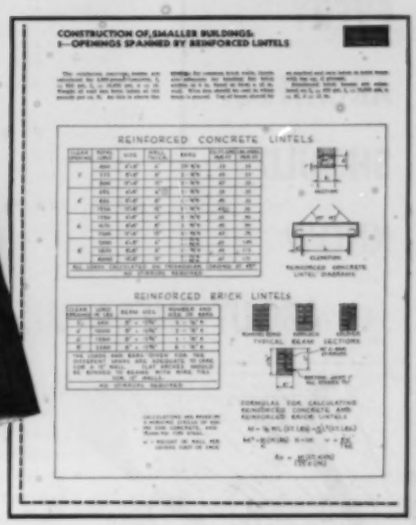

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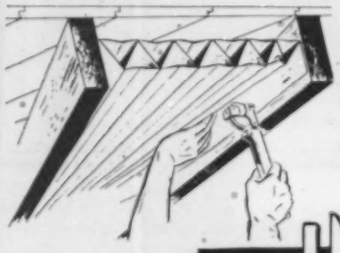

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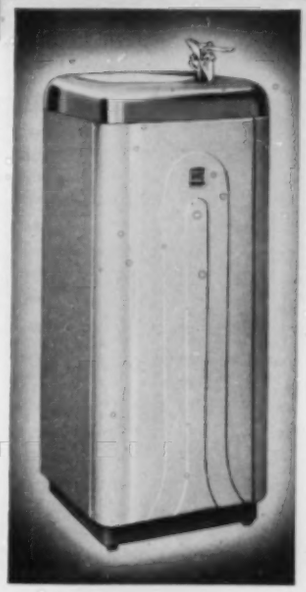

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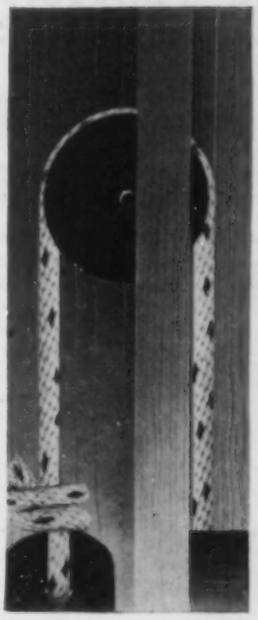

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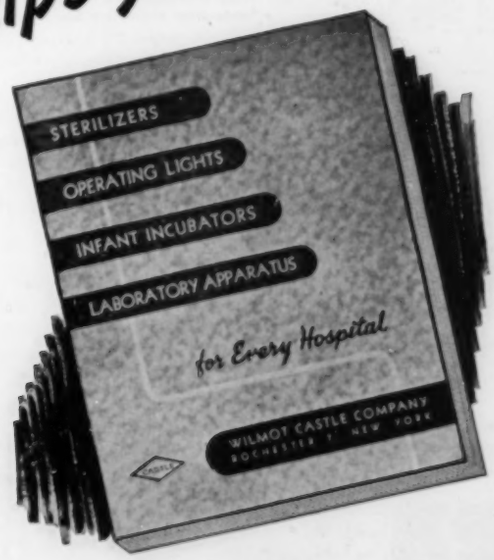

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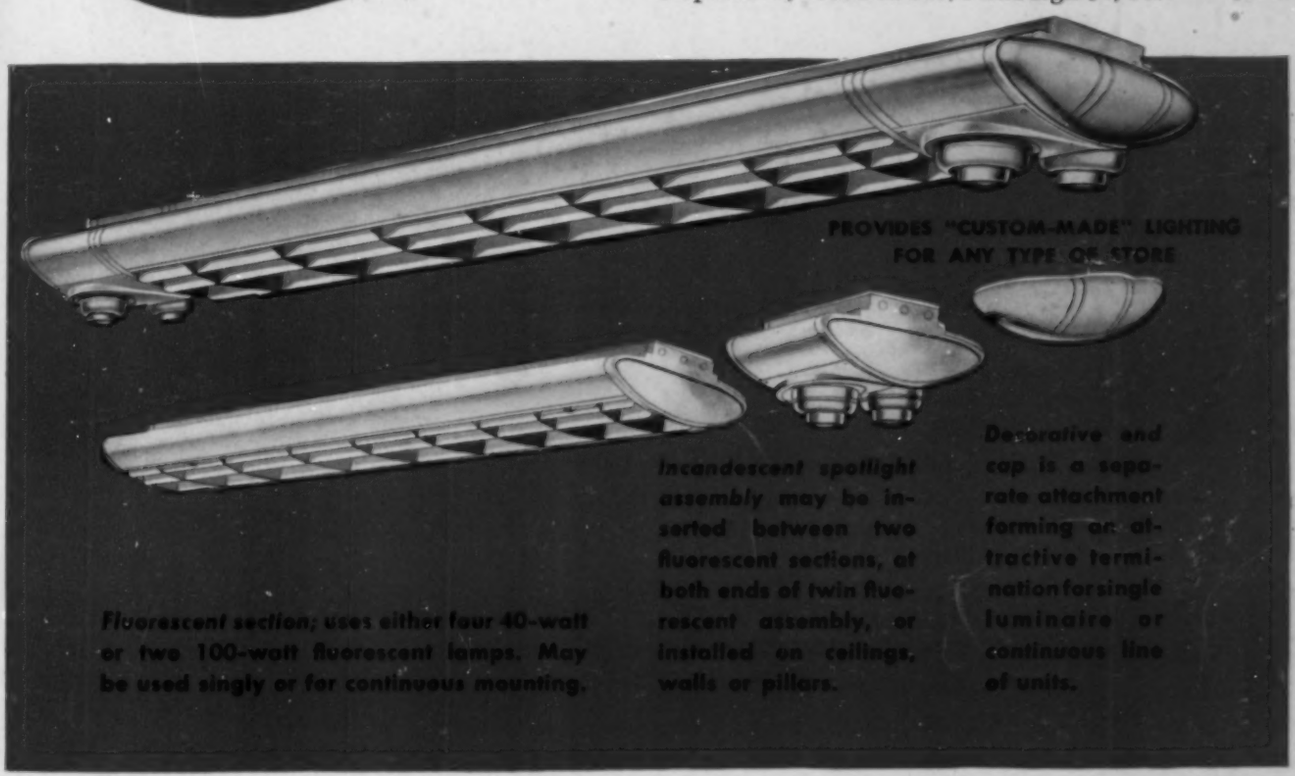
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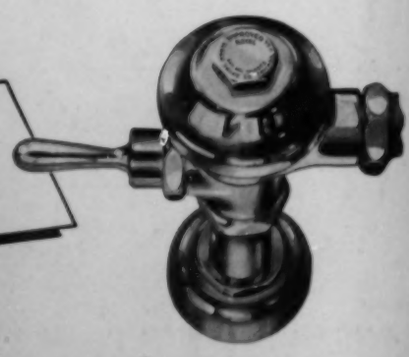
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